

The Mining Journal

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LONDON, SEPTEMBER 23, 1955

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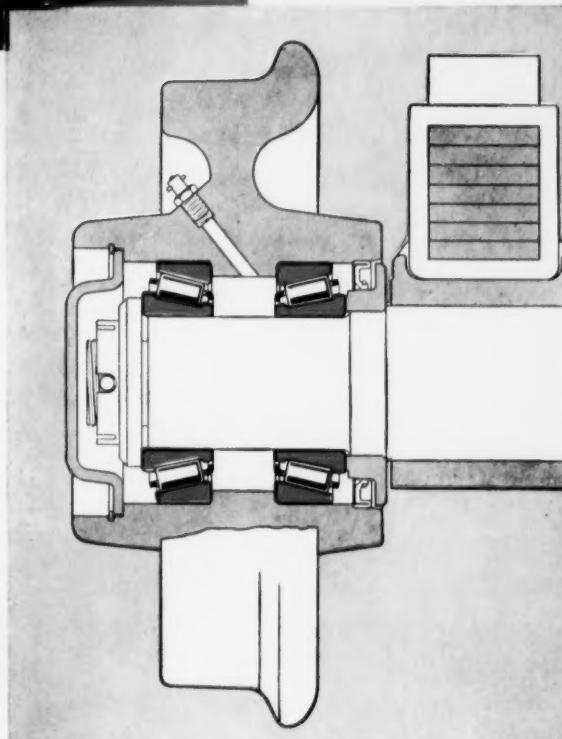
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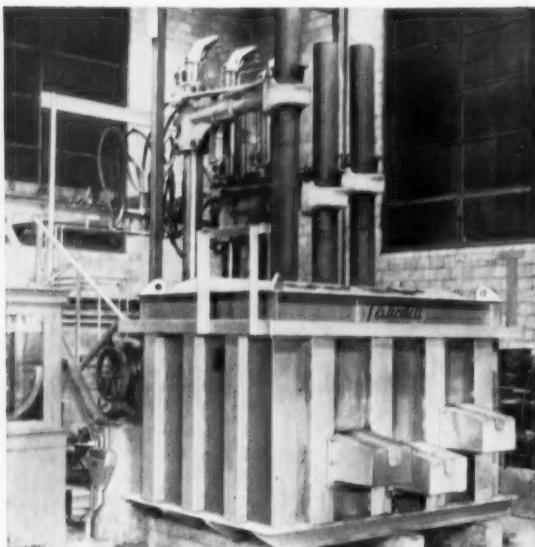
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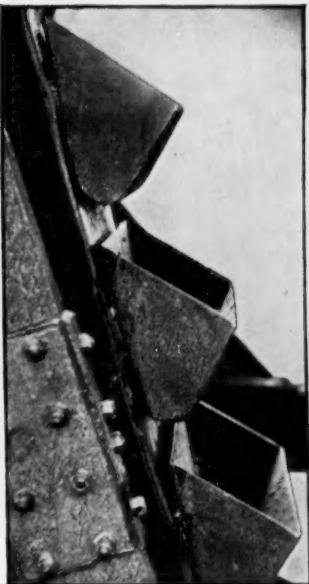
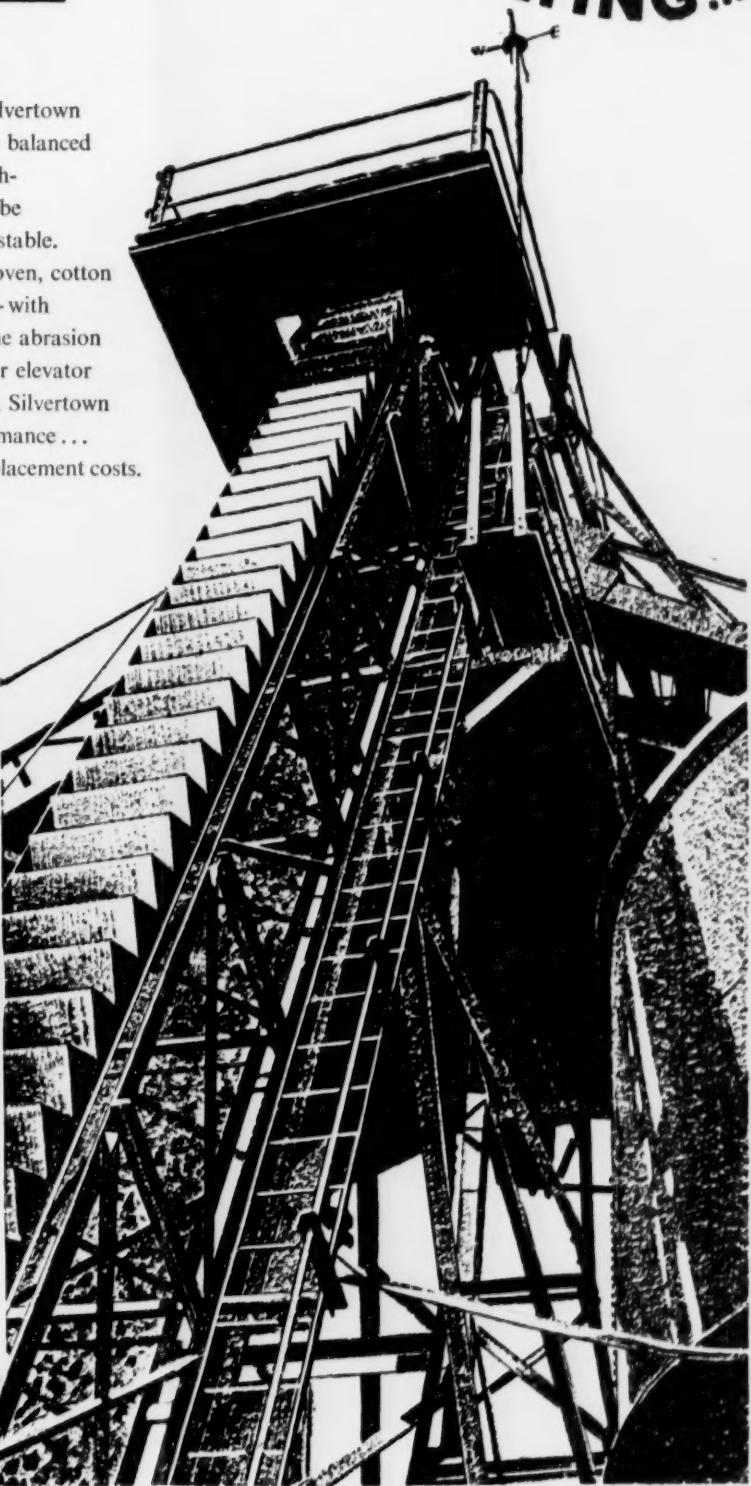
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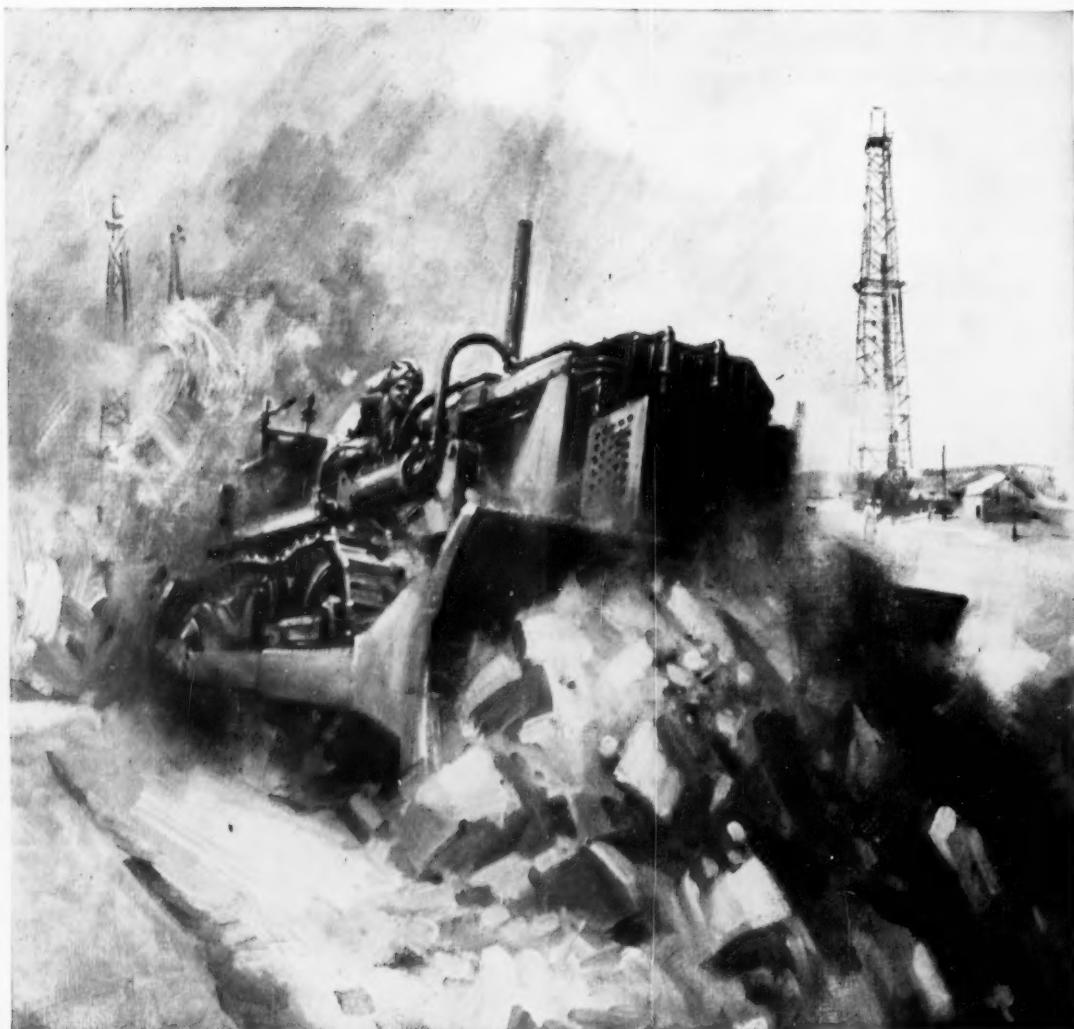
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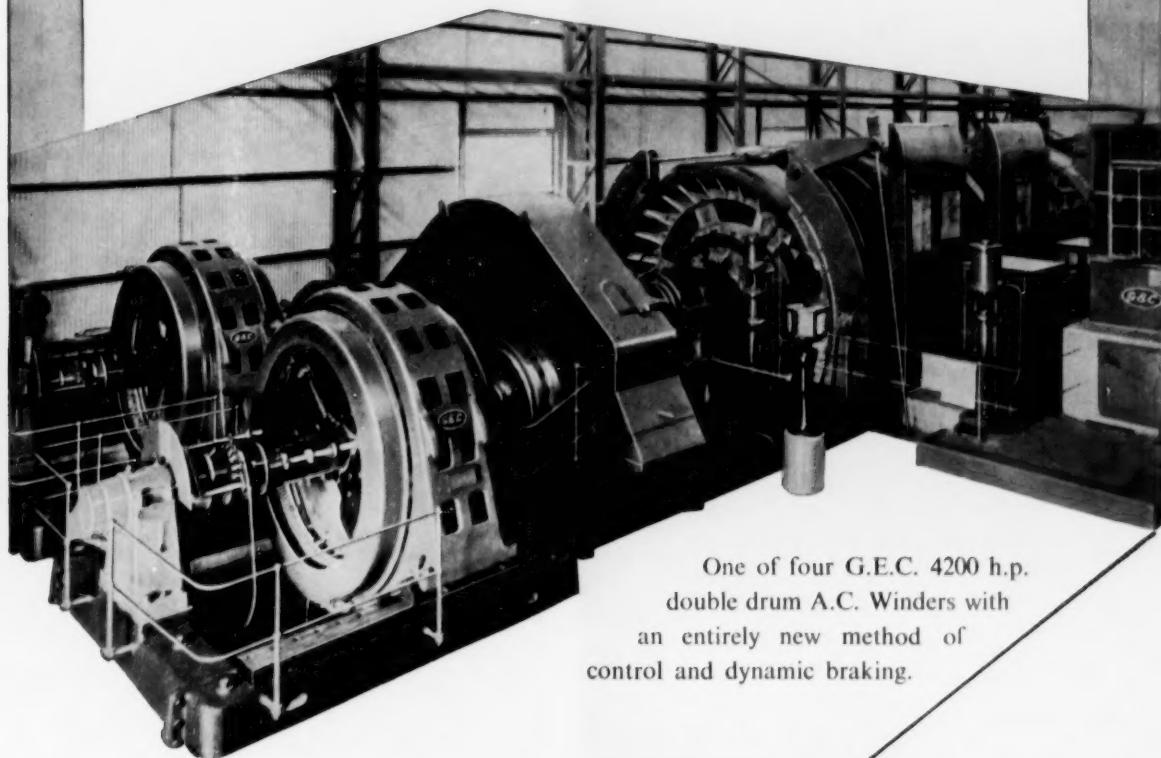
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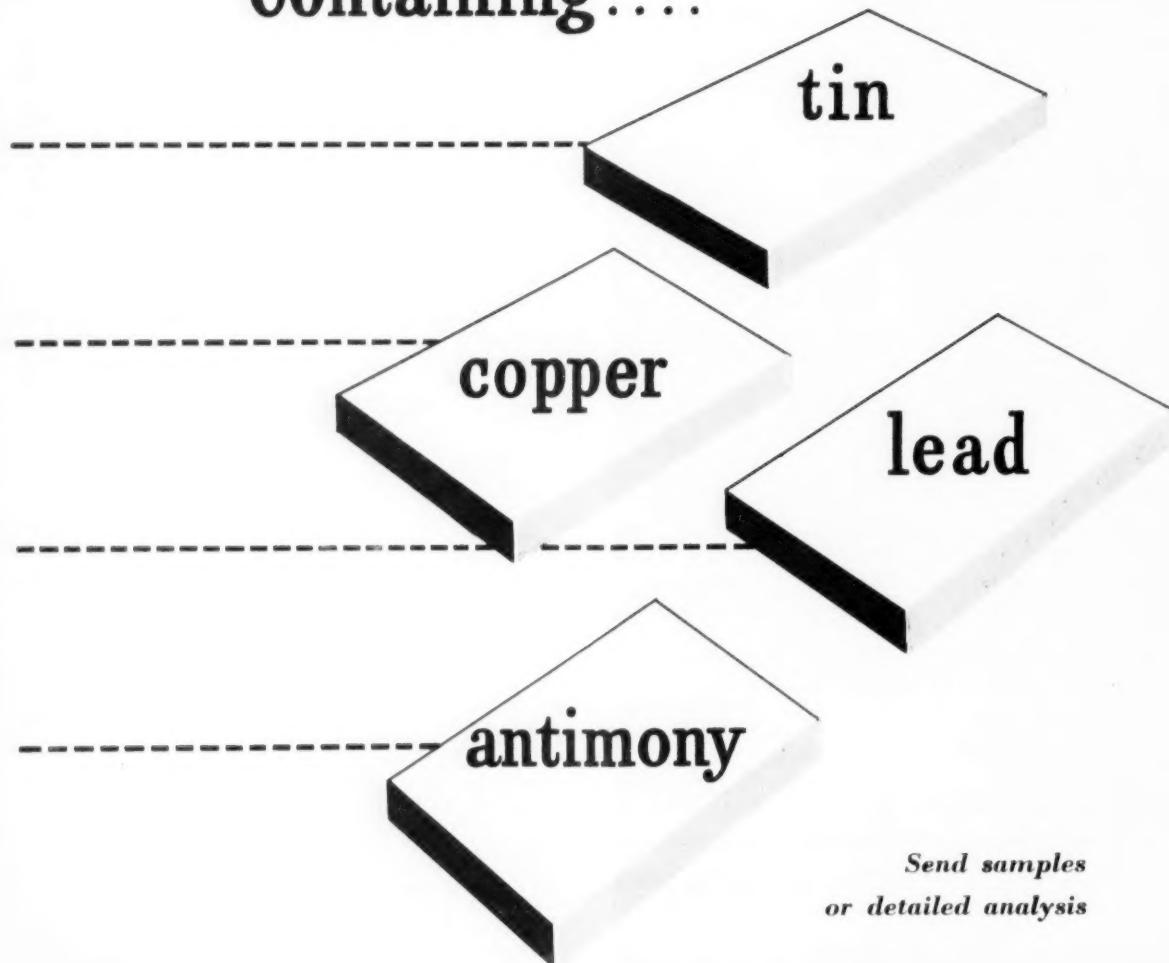


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The Mining Journal

Established 1835

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CONTENTS

Notes and Comments	347	Machinery and Equipment	355
From Our Portuguese Correspondent	348	Metals, Minerals and Alloys	356
Properties and Uses of Bastnaesite Cerium	349	The Mining Markets	358
St. John d'El Rey After 125 Years	350	Company News and Views	359
Undersen Drilling for Coal in Scotland	352	Company Meetings and Announcements	360
First Break Through in the Breadalbane Tunnelling Project in Scotland	354	Tronoh Mines Limited; Powell Duffryn Limited; Ashanti Goldfields Corporation Limited; Bibiani (1927) Limited	

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NOTES AND COMMENTS

Eire Encourages Mining

The Eireann Government's decision last week to bring in legislation granting four years' tax exemption on all new mining enterprises for the first four years following initial development operations has set an example which mining interests in the U.K. can only hope will be introduced into this country in the not too distant future.

The present penal nature of mine taxation in the U.K. has been a long standing bone of contention particularly to the Cornish Mining Development Association which has always held the view that with a more reasonable and equitable taxation code the U.K. base metal mining industry would achieve the stimulus it needed to encourage the prospecting and development work so necessary for it to become once more a viable sector of the country's economy.

Nor is this asking too much. No more is required—as the British Overseas Mining Association has never failed to point out—than to bring the present U.K.'s tax codes into line with the enlightened tax provisions operative in other Commonwealth countries, namely Australia, South Africa, Southern Rhodesia, Canada—and now Eire. Indeed, why successive U.K. Governments have refused to do so despite the many precedents established is impossible to understand. Yet, if the decision by the Eireann Government does no more than give B.O.M.A. another stick with which to beat the Chancellor before the end of the current fiscal year, it will still command the good wishes of the British mining industry.

The Eireann Government's decision in practice means that all new mining enterprises will be granted complete income tax and corporation profit's tax reliefs on all profits accruing during the first four years after work has begun, and that the normal effective tax will be reduced by 50 per cent during the subsequent four years.

While there is no mining industry in Ireland of any consequence (which makes it simpler to introduce tax discrimination in favour of the mining industry) it is not unlikely that Eire's granting of these new tax concessions is closely linked with negotiations now taking place con-

cerning the establishment of a new copper mining company at Avoca, County Wicklow. Mr. William Richardson, principal adviser to Mr. Gilbert Labine, has been negotiating with the Eireann Government for the establishment of a £2,000,000 mining company to work copper deposits at Avoca. Known locally as the "Silvermines" the workings have been kept open for some time by the Government and Mr. Richardson estimates that they contain at least 15,000,000 tons of proven 1.8 per cent copper ore together with lead and zinc.

Whether or not the prospect of having the largest copper mine in the U.K. and Ireland within its borders has prompted the Eireann Government to initiate the tax reliefs is immaterial. The point is that Eire has followed what must now be described as almost standard practice in introducing tax discrimination in favour of the mining industry in order that the natural resources can be exploited for the maximum benefit of the country.

"Casts" After Compensation

Because of the strong tide of nationalism so prevalent all over the world since the end of the war, many national and international commercial agreements—previously regarded as permanent—have been dropped or completely revised to bring them into line with changing political conditions. In most instances, the application of any exact legal yardstick has not been possible. Rather, has it been that any new arrangements reached have been drawn up purely and simply on the merits of the bargaining positions of the interested parties. Consequently, the result achieved, although politically realistic, more often than not were economically unsound.

The new terms reached earlier this week between Consolidated African Selection Trust (whose wholly owned subsidiary, Sierra Leone Selection Trust, carries out diamond mining operations in the Colony) and the Sierra Leone Government (detailed on page 359) provides a particular case in point. For the cession of the company's mineral rights over the major part of Sierra Leone in perpetuity for a consideration of a mere £1,570,000 could

hardly be described as a sound "business" transaction. Prior to the new agreement Sierra Leone Selection Trust possessed mining rights over virtually the whole of the Colony which were due to run for a further 77 years. In future, its mining rights will cover some 450 sq. miles which, although extremely large by any mining standards, is a mere fraction of the previous entitlement. Although it is not a strictly valid criterion on which to assess the compensation figure of £1,570,000, it is true that the financial surplus of Selection Trust during its past financial year of £1,268,000, before tax, is not far short of the payment received for the cession of its future mineral rights.

But, of course, this is not the whole story. During the past two years or so, illicit diamond mining has reached such proportions that it has threatened the existence of the whole social and economic fabric of the Colony. From the company's point of view it is greatly to be hoped that the new arrangements will give some relief from losses so incurred. Some idea of what this might mean can be gained from the fact that during the year 1952 a loss of some £670,000 in diamond sales was largely attributed to such depredations and during 1953 it was categorically stated that a drop of £430,000 was entirely due to this cause.

It is, however, a little difficult at first sight to understand how such losses could be made good by entering into the new agreement. There is, nevertheless, something to be said for the view that the granting of mining licences to Africans to enable them to carry out digging on their own accounts may lessen the attractions of stealing from the company. Moreover, on the assumption that the future volume of diamond output from the Colony will now very likely expand the black market price obtainable should fall. There is too the effect of the new agreement on public opinion to be considered. Hitherto, resentment against one company having sole rights over diamond mining was, perhaps, understandable. Under the new arrangements it is hoped that this feeling will die away, thereby easing the task of enforcing law and order. While it is hoped that this will prove to be the case, its probability is somewhat suspect if only because the existing available police force is too small to contribute effectively to its realization.

Apart from the benefit which the new agreement may bring to Sierra Leone the advantages to "Casts" in the long run may be considerable. Although the compensation received will be regarded by many as a purely nominal sum, the goodwill which may result could, over the years, redound sufficiently to "Casts" benefit that the arrangement may yet prove to have been the wise thing to do financially as well as politically. But this is not all. The 450 sq. miles "Casts" still retains will support diamond production at present levels for many years. Moreover, as the agreement allows for reasonable opportunities for prospecting there is no lack of further scope for expansion. In any event, may it not be a reasonable question to ask whether the company's mining operations would have taken it very far into the regions now ceded in the foreseeable future.

The Largest Iron Ore Body in the World?

Some years ago the United Nations investigated the Cerro Mutún manganese iron ore deposit in Bolivia, latitude 19 deg. South, Longitude 58 deg. West. At that time the United Nations representative considered the deposit to be an uneconomic proposition because of the excessive cost involved in railing and shipping the ore to manufacturing centres. More precisely, a railway at least 50 miles in length would have to be built to the nearest practical transhipment site on the River Paraguay. Such

a practical location for this operation would not be easy to find as the streams are shallow with shifting sandbanks and therefore intermediary stages of transhipments to river barges would be necessary before ocean-going vessels could undertake the loading of the ore.

Notwithstanding these obvious difficulties Bolivia is going ahead with the development of this manganese iron ore deposit which has been described as the largest iron ore body in the world. The Bolivian Government recently entered into an arrangement with Brassert and Co., 60 East 42nd Street, New York, 17, N.Y., to make a detailed examination and appraisal of the deposit. Our information is that two geologists have just left for Puerto Suarez—the nearest available airfield—to undertake the preliminary examination to be followed, we understand, by extensive diamond drilling.

The one fact that injects some substance into the Bolivian Government's decision, is that the Eximbank, New York, recently made a loan of \$60,000,000 to the Argentine Government for the purpose of constructing an iron and steel works. Since the Argentine is not—on known information at any rate—blessed with abundant supplies of iron ore or coal, the Mutún deposits could, in the long term, assume some importance. Nevertheless, we should be extremely surprised if Bolivia has, in fact, found another Cerro Bolívar and it may well be that as so often happens in the South American Republics that national aspirations of this kind stem from political resourcefulness rather than indigenous resources.

Portugal

(From Our Own Correspondent)

Foz Do Douro, September 12.

Both the 1954 and 1955 figures for WO₃ ores include the tonnage of residues shipped. This is estimated at 500 tonnes for both years, or 1,000 tonnes in all. A comparison between the export figures for the first six months of 1955 as compared with a similar period of 1954, shows these results (in tonnes).

	1955	1954
WO ₃	2,244	1,610
Sn	87	387
Cupreous Pyrites	225.885	182,189
Roasted Pyrites ...	*	8,650
Tin Metal	56	179
Haematite	54,798	41,200
Magnetite	20,851	12,650
White Arsenic	732½	435½
Manganese	5,431	Nil

* No Roasted Pyrites were exported in 1955.

Taken as a whole WO₃ ores show an improvement, cassiterite very much the contrary, iron ores are better, tin metal has fallen off and white arsenic has been in demand.

As from March of this year the *Official Bulletin* altered the old method of only publishing the production figures for certain ores. A more detailed report is now published, giving the production figures for such material as tantalite/columbite, beryl, gold and silver-bearing pyrites, etc. The export figures for this material is not given.

Portuguese mineral production during March was (in tonnes): WO₃, 320; cassiterite, 141; beryl, 35; lead, 228; mixed As/TiO₂, 7; mixed Sn/WO₃/Ca, 11; manganese, 474; TiO₂, 52; scheelite, 44; gold/silver-bearing pyrites, 198; haematite, 9,455; magnetite, 2,500.

Export figures for May were (in tonnes): WO₃, 460; cassiterite, 24; cupreous pyrites, 33,185; haematite, 15,349; magnetite, 2,700; tin metal, 350 (kilos); white arsenic, 30,500 (kilos).

Properties and Uses of Bastnaesite Cerium

In addition to the traditional Swedish source, the rare earth mineral bastnaesite occurs in the United States and in Madagascar in the pegmatites in the deposits. Comparatively recently bastnaesite was discovered in Ruanda-Urundi, Belgian Congo, by the Société Minière de Muilinga et de Kigali (Somuki), the exact site being Karonge near the northern extremity of Lake Tanganyika. The following article describes the properties, structure and uses of bastnaesite cerium with particular reference to its applications in the preparation of alloys.

The crystalline structure of bastnaesite has been variously described as rhombic and as hexagonal. Its hardness (Moh's) usually lies between 4 and 5; density between 4.831 and 5.948; and the refractive index may vary between 1.717 and 1.824. The mineral crystals are uniaxial, while the property of pleochroism is exhibited only faintly. Bastnaesite is insoluble in hydrochloric acid, but may be dissolved in sulphuric acid, which latter releases the gases fluorine and carbon dioxide. Its colour ranges from yellow, through brown to red.

THE KARONGE BASTNAESITE

Consideration of the Somuki product, which is closely related to parisite, shows it may be regarded as a fluocarbonate of lanthanum and cerium. Tests show it to have the following properties: Density 4.88 to 4.93; Moh's hardness 4.5; crystalline structure is uniaxial; pleochroism very weak; while refractive indices as high as 1.820 have been recorded, the average lies between 1.714 and 1.720. The mineral is of a brown-red colour, with a pearly sheen, is translucent and breaks into irregular slabs or flakes inclined about 20 deg. to the angle of refraction. Although the tests made were not very accurate, owing to the impossibility of obtaining a suitable sample, the properties of the mineral appear to be in accordance to some extent—in spite of the divergences noted between the following two chemical analyses—with the generally accepted description of bastnaesite.

Cerium dioxide, CeO_2 , is the stable oxide and contains quadrivalent cerium, but by the use of heat in the presence of such metals as calcium, the CeO_2 is reduced to cerous oxide, Ce_2O_3 . From this oxide the partly soluble hydrate, $\text{Ce}(\text{OH})_n$, is formed when lime (CaO) and moisture are present and this probably explains the loss of cerium oxide—with possibly other rare earth oxides—during refining.

USES IN ALLOYS

The German Mischmetal, or mixed metal, is a mixture of rare earths containing from 50 to 55 per cent cerium, with a proportion of various other elements such as lanthanum, samarium, gadolinium and yttrium. Since the chemical properties of these elements are similar, it is difficult to isolate them, but separation is not necessary in order to use mischmetal as an alloy. The iron content of mischmetal—usually between 1.5 and 2.0 per cent—affects the point of fusion of the product. Mischmetal alloys easily with many metals, it oxidizes readily and is a good reducing agent, the exothermic properties of which enable the fluidity of the metals to be prolonged during fusion. The use of cerium as the sparking component in ignition equipment is well known.

In the alloys known as Ceraluminium B and Ceraluminium C, cerium is used as a grain refiner. These alloys correspond respectively to RR50 and RR533, from which they differ only in that cerium, and not titanium, is employed to make the grain finer. As far back as 1938, I. G. Farben Ind. patented an alloy which has a magnesium base with 2.5 Mr and 1.0 per cent Ce, wherein the cerium is used to facilitate lamination which may otherwise be unfavourably affected by heterogeneous crystallization. During and after the last war the alloys Mg-Ce, Mg-Ce-Zn, Mg-Ce-Mn were

ANALYSIS OF SOMUKI BASTNAESITE

Component	Crude %	Refined %
CeO_2 ...	31.85	27.91
Oxides of other rare earths ...	32.26	28.41
ThO_2 ...	trace	trace
CO_2 ...	11.75	10.10
P_2O_5 ...	8.40	7.76
SiO_2 ...	2.20	9.79
Fe ...	4.72	6.26
V_2O_5 ...	0.05	0.05
F ...	3.42	3.11
Al_2O_3 ...	0.74	1.06
Pb ...	0.49	0.45
CaO ...	0.10	0.05
Mn, U, BaO, etc. ...	0.5	0.4

closely studied and it was established that the greatest interest in these alloys was in their good retention of mechanical properties when heated, and in their high melting point. Where work at ordinary temperatures is concerned, cerium alloys react in the same way, or are somewhat inferior, to the more usual magnesium alloys. The Germans used an alloy of Mg-Mn-Ce for forging certain parts for their BMW 801 D aircraft.

APPLICATIONS IN CASTING

In the field of casting, cerium metal may be alloyed with magnesium to improve structure, heat resistance, tensile strength and hardness of articles to be cast or forged. The addition of cerium improves the quality of the cast pieces and reduces the number of faulty ones. Cerium metal also may be employed in casting to arrest graphitization and as a means of whitening the material.

Referring to improvements in casting, a report by R. F. Marande, Dow Chemical Co., claims that benefits were obtained in spite of the fact that a quantity of cerium metal which had been added, disappeared during fusion of the alloy. Germany has also used cerium metal as an alloy with aluminium for the production of moulded goods. It has been stated in the review *Metal Progress* that articles so cast rank as the highest possible standard of moulding in aluminium. It is claimed also by S. Smirnow-Verin in *Modern Metals* that the addition of 0.35 per cent cerium in an aluminium alloy obviates all rejects caused by cracking and porosity in the casting of pistons.

Even comparatively low percentages of cerium may give a greatly improved result, although analysis of the product fails to reveal any trace of cerium. Experiments have been made to show the effect of from 0.05 to 5.0 per cent of cerium and in each case analysis showed that the cast article contained much less cerium than had been added; but in spite of the small proportions added, these had a considerable effect on the finished article. Even when only minute traces of cerium were found, graphitization was almost completely arrested, and the cerium addition had served as a whitening agent. It was also noted that the Brinell hardness and shear resistance were improved.

It is reported that improvements in the quality of tungsten have been achieved by the addition of cerium metal, and in particular the specific gravity and Rockwell hardness.

St. John d'El Rey After 125 Years

THE STORY OF MORRO VELHO

The story of the Morro Velho mine in Brazil, a property of the St. John d'El Rey Mining Co., might be paralleled by other working mines in many fields of the world, in that final successful exploitation was achieved only after a period of trial and error coupled with marked disappointment on the part of engineers and shareholders alike. The Morro Velho, however, differs from the majority of contemporary producers in its longevity, as the mine "is probably more than 200 years old and has been worked by its present owners for nearly a century and a quarter." The following article is condensed from an extremely attractive book telling the mine's history and published by Samson Clark and Co. Ltd. for the St. John d'El Rey Mining Co.

Morro Velho, the famous gold mine owned by the St. John d'El Rey Mining Company, is situated in the State of Minas Gerais, in Brazil, two hundred miles inland and almost due north of Rio de Janeiro. The mine is probably more than two hundred years old and has been worked by its present owners for nearly a century and a quarter.

The "Companhia do Morro Velho"—as it is known in Brazil—experienced difficulties, disappointments, and major disasters, but its leaders, both in London and Brazil, have always been men of courage and vision and every setback merely served as a springboard for new efforts.

Despite its long and prosperous life the mine still has immense reserves of orebodies and a future that should at least match its past. The story of this highly successful undertaking has been ably told in a book published by the St. John d'El Rey Company for private circulation. This fine publication has been beautifully printed and contains outstanding reproductions of early paintings of Morro Velho and its rugged surroundings.

In 1824, two years after the declaration of Brazil's independence, the Constitutional Charter of the Empire intro-

duced the notion of mining concessions and so opened the way for the first gold rush of the nineteenth century. One of the first to take advantage of the new conditions was Dr. George Such, a German, who worked mines at Sao Joao d'El Rey and Sao Jose in association with several partners. These properties were subsequently acquired by a group of City men, described as "directors of an Association for Working the Mines of Sao Joao d'El Rey in the Province of Minas Gerais in the Empire of Brazil". In May, 1830, Charles Herring was sent to Brazil to act as superintendent and operate the mines on the Association's behalf. Herring sailed for Rio de Janeiro at the head of a party of nineteen picked men and the St. John d'El Rey Mining Company was under way.

Unhappily, the mines at Sao Jose and Sao Joao d'El Rey did not fulfil expectations; the first was waterlogged and unworkable and the second yielded such a poor return that it, too, had to be abandoned. In 1834, the company transferred its activities to Morro Velho, which was purchased for the sum of £56,434, inclusive of the entire effects listed as slaves, cattle, livestock, ores, tools, implements, machinery and stores.



The Morro Velho mine. The reduction works and shops are in the foreground, with the European residential area in the right background. The town of Nova Lima is on the left.

At a time when speculation in Brazilian mining was resulting in the establishment of countless mushroom ventures, St. John d'El Rey went from strength to strength. The technical efficiency of Morro Velho steadily improved. As the workings descended into the lode it became clear that the optimism of the pioneers was well founded and the company was able to devote increasing attention to the amenities of the settlement and the welfare of its labour force.

In the *Mining Journal* of January 6, 1849, the position was thus described: "This company work three mines contiguous to each other and drained by the same water-wheel; the lode in two of the mines varies in width from 8 ft. to 32 ft., averaging 14½ ft.; and the third, the Gamba, 4 ft. 7 in. The lodes dip boldly at an angle of 46 deg., at which incline the pumps are carried, and on the same plane the kibbles from the stopes under the inclined shaft are hauled to surface. There are two water-wheels for drawing stuff; one for the saw-mill; and one at the reduction house for working the amalgamation barrels; and six others at the stamping-mills, working 96 heads. The whole body of the deposit between the walls gives gold, yielding in different sections 2½ to 5 oitavas to the ton, 10 oitavas being equal to 1 lb. troy. The average produce for 1847 was 4.21 oitavas per ton, which was worth, in London (net), 7s. 7d. per oitava, or £39 16s. per lb. troy. A cubic fathom of the deposit contains something more than 20 tons; and each fathom sunk in the three mines admits of about 9,000 tons being broken, and the stopes kept in order. The mine is now giving a clear profit of about £3,000 per month."

INSTALLATION OF VERTICAL SHAFTS

A major disaster occurred in 1867, when Morro Velho was ruined by fire and subsidence, the workings being completely destroyed. Abandonment of the enterprise was not considered. Instead, experts were sent out to decide on the best way of re-opening the mine. It was decided to sink two vertical shafts, each more than 1,000 ft. in depth, one of them probing directly into the lode and the other having access to it by means of a short gallery. This work was accomplished, despite appalling difficulties encountered during the sinking operation, for a total expenditure of £84,000. On October 7, 1872, contact with the lode was achieved almost exactly according to plan.

At first the new venture struck it rich. In 1875, 616,519 oitavas were produced and the dividend for the second half of the year was equivalent to 50 per cent. For several years, however, the mine appears to have been run inefficiently and without regard to its future working. The quantity of ore raised and crushed was maintained, but the yield in gold declined steadily and in 1883 was only 198,716 oitavas. There was much unproductive rock to be extracted and the lode narrowed and became less auriferous. The general working atmosphere of the mine began to deteriorate and there were ugly rumours. This period of adversity culminated in the disaster of 1886, when the entire workings were destroyed and flooded.

The main lode had by then been worked for 41 years and had produced no less than 47 tons 8 cwt. 2 qtr. and 1 lb. of gold. Nearly £1,500,000 had been distributed in dividends to shareholders.

After the collapse, the world, and apparently the company, was prepared to write off the mine as a complete loss. But one man, George Chalmers, realized that the best was yet to be. Chalmers had been appointed superintendent in 1884 and it was he who rescued the Morro Velho by the introduction of a new and improved system of mining. His plan envisaged a new mine, far removed from the old workings and reached by means of two new shafts at



The top of D shaft, where the adit joins the Main Shaft

least 2,000 ft. deep, which would be carried down vertically to 30 fathoms below a roof of 8 fathoms thickness left intact between the old and new workings. The lode would then be reached by a drift and would be stope horizontally, the stope being 30 fathoms deep. By this mode of working the lode would be removed in chambers limited in size and consequently manageable as to the amount of timber required for safety.

PROSPERITY OF THE COMPANY

Gradually these revolutionary ideas found favour with the Board and finally it was decided to reopen the mine. By November, 1888, 221,648 shares of the new capital had been subscribed and within six months the boring machinery and shaft sinking equipment reached Morro Velho. By the end of 1893 the size of the lode had been proved to everyone's satisfaction and during the year nearly 17,000 tons of ore were raised. In the following years Chalmers' description of Morro Velho as "one of the most promising undertakings of the mining world" proved to be fully justified. From 1900 to 1923, when this outstanding superintendent retired, the quantity of ore raised annually ranged from 146,000 to 201,500 tons, compared with 23,692 tons in 1894, with a proportionate increase in the recovery of gold.

In 1953 209,773 tons were raised from Morro Velho and a further 107,000 tons from Espírito Santo Mine and other properties owned by the company. In 1953 the estimated reserves were 5,161,000 tonnes at Morro Velho and 1,530,000 tonnes at Espírito Santo.

During the year ended December 31, 1954, ore reserves at Morro Velho eased to 5,156,000 tonnes with an average content of 13.6 grm. gold per ton while those of the Espírito Santo Mine were raised to 1,886,000 tonnes, having an average gold content of 9.6 grm. per ton. Thus, after 125 years of more or less continuous working, St. John d'El Rey can still face the future with confidence in the knowledge that total estimated ore reserves amount to 7,042,000 tonnes having an average gold content of 12.5 grm. per ton.

Undersea Drilling for Coal in Scotland

By A. GRIERSON, B.Sc., A.M.I.Min.E.

In an endeavour to prove undersea coal deposits off the coast of the United Kingdom, the National Coal Board ordered the design and construction of a transportable drilling tower. Necessary factors in the design of this unit were ease of mobility from one operational site to another and the rapid commencement of drilling once a working position was reached. The tower was designed and constructed by Maunsell, Posford and Pavry as the consulting engineers, while The Cleveland Bridge and Engineering Co. were appointed contractors. The tower accordingly was constructed at St. David's Harbour, Inverkeithing, Fife, and in May was towed offshore from Kirkcaldy, where information is needed for the planning of the workings of the new Seafield Colliery on the north shore of the Firth of Forth. The following article describes the construction of the tower, its establishment on site, and the results of the drilling achieved to date. Acknowledgments are due to the consulting engineers for the illustrating photographs.

Coal lying beneath the sea is mined from a number of collieries in the coastal coalfields of Great Britain. In certain areas, notably East Scotland, Durham, Northumberland and Cumberland, the extension of the coal seams under the sea represents an important portion of the available reserves. As the inland reserves are being depleted it is becoming increasingly important that precise geological data be made available in order that these off shore reserves can be worked to the best advantage. Heavy capital expenditure for development of coastal collieries is being undertaken and will be accelerated as inland reserves are exhausted.

On land the requisite information relating to seam thickness, quality inclination and depth, etc., together with that of the adjacent strata is, of course, obtained by boring from the surface and by exploratory drivages and boreholes from existing underground workings. The National Coal Board consider that exploration of coastal reserves by means of underground drivages is too slow a process and the information is not available sufficiently early for the estimation of available resources and for the proper planning of major projects.

The need for precise advance information has assumed greater importance at the present time with the trend towards horizon mining and the need for expensive main arterial roads designed to give the best access to the coal to be worked. This departure from the older system of driving all roads in the seam makes it imperative from the planning aspect that the exact location of the seams be known at the outset.

TRANSPORTABLE DRILLING TOWER

Accordingly, in order to prove undersea deposits of coal lying off Britain's shores the Coal Board appointed Messrs. Maunsell, Posford and Pavry, Consulting Engineers, to undertake the design and construction of a transportable drilling tower. These consultants were responsible for establishing nearly 50 sea forts during the war, some of them nearly 30 miles out to sea, and their success with these and other maritime engineering projects enabled them to develop construction techniques which could be employed relatively quickly and economically. The essential difference between this sea boring tower and those used for many off shore oil wells is that it was to be easily moved from site to site and equipped to take up a position and start boring operations within a few hours of reaching its sea station.

It was decided that the first attempt at undersea drilling for coal be made in the sheltered waters of the Firth of Forth, Scotland, where information is needed for the planning of the workings of the new Seafield Colliery now being sunk near Kirkcaldy on the north shore of the Forth.

The tower was constructed at St. David's Harbour, Inverkeithing, Fife, some 12 miles along the Firth of Forth from where the initial borehole was to be put down. The Cleveland Bridge and Engineering Co. were appointed as



The tower in position.

main contractors to work under the supervision of the consulting engineers.

In the essentials the tower consists of a specially fabricated tubular steel framework resting upon a heavy steel cruciform girder. Each of the two members forming the cross is 167 ft. long, 3 ft. wide, and 7 ft. deep. When towing, these girders can be pumped dry and filled with air, giving a buoyancy of base of 200 tons. Each leg of the four-sided tubular tower is attached to the top of the box girder cruciform base. The tower has 80 ft. sides at the base tapering half way up to 40 ft. It is the first of its kind, and in many respects it is unique. All the members and joints were prefabricated at the Clyde Works of Stewarts and Lloyds, and were then sent to the assembly site.

FACTORS OF CONSTRUCTION

The tower has only 90 tubular members, of which 64 are in compression and 26 in tension. There are 24 multi-branch joints, where from four to ten tubes meet. At the four corners where the tower is bolted to the cruciform girder base each joint has five branches composed of 24 in., 18 in. and 15 in. tubes. The compression members are flanged and bolted to the joints, while the tension members have double-jawed heel pieces which are pinned to the single heel piece on their respective joints. The 24 main branch joints have special internal plate diaphragms welded in to stiffen the fittings against the loads imposed by the branch connections. Provision has been made to enable an extra 40 ft. height of structure to be interposed between the existing top of the structure and the base of the tower, thus permitting drilling in 120 ft. depth of water.

The tubular framework presents less obstruction to wave and wind pressure and it is claimed that the tower can withstand an 80 m.p.h. gale and be unaffected by 30 ft. waves. All tubular members are flanged and bolted to the joints in preference to welding. This facilitates dismantling and erection.

The working deck supported at the top of the framework is octagonal in shape, 86 ft. overall. On it is mounted a normal drilling rig in a 54 ft. high derrick housing. There is ample space for the storing of drill rods, cores, casing, etc., and a two-ton mobile crane is carried on the deck for the loading and unloading of the supply vessel while the tower is at sea. Beneath the main deck is slung an accommodation deck comprising cabins for 25 men, a boremaster's office, galley, mess room and recreation room.

OPERATIONAL PERSONNEL

The crew on the drilling tower are employees of the boring contractors, the Foraky Drilling and Shaft Sinking Co. Ltd., and comprise the engineer in charge, boremaster, two assistant boremasters, three winchmen, one cook, two fitters and six drillers. Boring takes place over 24 hours with the men working 12-hour shifts. The present procedure is for the men to work three weeks continuously and then have seven days' leave. In order to counteract boredom on off-duty periods the recreation room is extremely well equipped and, in addition to games facilities, a television set and radio have been provided. Each man has his own furnished cabin and there is a bathroom to every four cabins.

In addition to their normal duties the crew are responsible for such other operations as maintaining a radio link



The boring tower assembled at Inverkeithing.

with the shore base at Kirkcaldy, and keeping the living accommodation in good order.

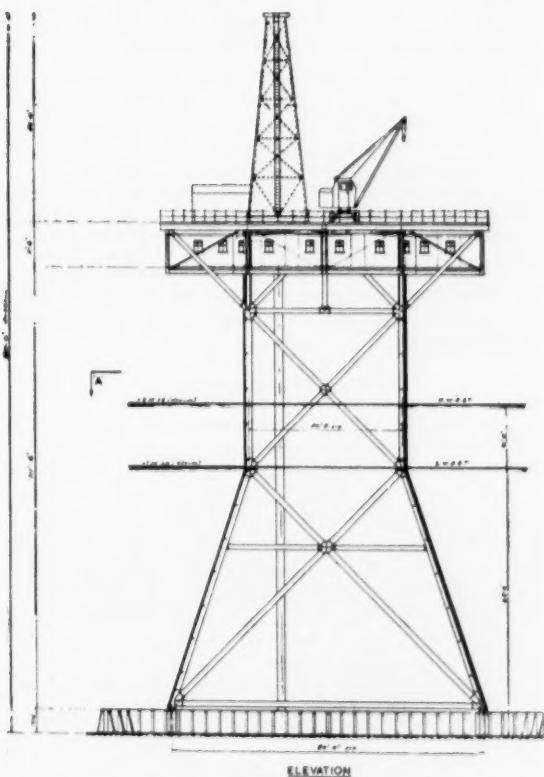
Fog signals, recognition lights, and other navigational aids are fitted, and emergency signals by means of rockets can be made if the radio link breaks down.

MOVING INTO POSITION

As previously mentioned, the tower was assembled on the beach at St. David's Harbour and in May it was towed to its present site 1½ miles offshore from Kirkcaldy. The method of lifting, transporting and lowering the tower resembled that used for the anti-aircraft sea fort designed by the consulting engineers. Two pontoons, each 170 ft. long, 17 ft. 6 in. wide and 7 ft. high were constructed. Each housed two electrically-operated 20 tons capacity winches carrying the steel cables used for raising and lowering the tower on the site. Each pontoon had a displacement of 157 tons when fitted out with all its equipment, and this, together with the 550 tons displacement of the tower, gave a total displacement of some 832 tons. This total displacement was reduced by 200 tons by filling the hollow cruciform girders with air.

It is interesting that these pontoons are being modified to provide a bigger lift when the tower is subsequently raised from the sea bed at the present site ready for towing to a fresh site. The exact pull required to lift the tower cannot accurately be estimated as it depends, to a large extent, on how far the structure has sunk into the mud on the sea bed. However, the pontoons are being modified and will be able to operate with decks awash during lifting.

The drilling tower was taken to its present site in late May of this year. For this operation the pontoons were shackled to the diagonals of the cruciform base, on opposite sides of the tower. The entire unit was then towed to its present site by Admiralty tugs and the tower was then slowly lowered on to the sea bed by means of the hawsers driven by the winches housed in the pontoons. The power to drive these winches is supplied by the diesel-electric sets



Elevation of the N.C.B. sea-boring unit.

on the tower. The lowering speed of the winches is 40 ft./min. and via the 7:1 reduction block this gives a tower movement of some 6 ft./min. When the tower grounded the lowering cables were unfastened from the cruciform and the pontoons were then towed away. The lowering operation was accomplished without great difficulty and alignment checks taken immediately after the grounding showed a departure from the vertical of slightly more than 0.5 deg. Subsequent bedding in has reduced this tilt to approximately 0.25 deg. Bearing in mind that the tower is resting on some 60 ft. of silt—considerably more than was anticipated—this result is highly satisfactory and reflects credit on those responsible for designing and building the tower.

DRILLING OPERATIONS

The drilling and recovery of the cores is similar to land operation with the exception that a tubular casing 160 ft. long and 24 in. in dia. shields the drill rods through the water and to a point 30 ft. above bed rock. Originally, it was intended that this casing should go right down to bed rock, but as mentioned previously, the layer of silt overlying bed rock was much thicker than was anticipated. Drilling therefore commenced in early June with the shield casing some 33 ft. into the silt. The casing tube weighs 8 tons. The first 858 ft. were drilled at 8 in. dia. and the next 650 ft. with a 7 in. dia. core. These cores were stored



The tower being towed to the boring site.

on the tower deck and inspected and sampled by the Coal Board geologists at intervals. Some trouble has been experienced due to the adverse effect of the sea water on the drilling mud, the use of which has now been discontinued. The borehole is, at time of writing, down to 1,508 ft.

Although the initial cost of the tower and related equipment was £170,000, if its use at this and subsequent boreholes results in a continuance of such additions to geological knowledge as has already obtained, the tower will soon justify its existence.

First Break Through Achieved in the Breadalbane Tunnelling Project in Scotland

The first break through in the tunnels being driven by the Mitchell Construction Company of Peterborough on the Breadalbane project of the North of Scotland Hydro-Electric Board was achieved last week on the Dalchonzie section (16,226 ft.). This tunnel of 11 ft. 6 in. dia. will carry water from the River Earn to a generating station at Dalchonzie.

Work on both the East and West headings of this tunnel commenced in October, 1954, and the break through after 11 months was three-and-a-half months ahead of schedule, in spite of four soft patches, two at the west end and two at the east end with a total length of 150 ft. The total footage driven from both ends was 16,226 ft. and allowing for

the time that was taken by annual and trade holidays the average rate of progress on the downstream side has been 186 ft. per week and on the upstream drive 200 ft. per week, giving an overall average of 193 ft. per week.

The total footage drilled was 134 miles, 3,276 ft. and the total amount of explosive used 153 tons 13 cwt. of polar ammon gelignite. The average pull on the downstream face was 5 ft. 2 in. and on the upstream face 5 ft. 5 in. Tunnel spoil removed totalled approximately 75,000 cu. yd. Approximately 1,000,000,000 cu. ft. of compressed air at 100 lb. p.s.i. was delivered to the face and the Ruston Hornsby locomotives travelled approximately 10,000 miles.

Altogether the Mitchell Construction Company are driving 19 miles of tunnel on the Breadalbane project and the average rate of progress in recent months has been one mile per month.

EUROPEAN RECORD

It will be recalled that a European tunnelling record was achieved on the St. Fillans section of the Breadalbane project during seven working days in December, 1954, when a tunnel 10 ft. in dia. was driven a distance of 428 ft. through very hard epidiorite rock. Yet a further increase in footage achieved was announced recently by Marples, Ridgway and Partners Ltd. during work on the Allt-na-Lairige project of the North of Scotland Hydro-Electric Board when 444 ft. was advanced in the seven days commencing March 31, 1955.

Eimco rockershovels were used in both these projects, while drilling equipment for the record Glen Almond Tunnel drive, St. Fillans section, was supplied by Atlas Diesel, with Holman Bros. supplying the drilling equipment for the record created on the Allt-na-Lairige project.

The consulting engineers on the Breadalbane project are Sir M. McDonald and Partners.



An Eimco Rockershovel in tunnelling operations in Scotland.

MACHINERY AND EQUIPMENT

U.K. Mining Locomotives for East Africa

Two battery-trolley type mining locomotives have been built by The Clayton Equipment Co. Ltd. for a gold mine in Tanganyika. The locomotives, built for 24-in. track, have a service weight of 6 tons, a maximum draw bar pull of 3,000 lb. at the one-hour rate and an average speed of 6 m.p.h.

They are equipped with Exide-Ironclad batteries of 96-MVU13-C cells with a capacity of 210 Ah at the five-hour rate. Rechargeable from the trolley wire current the batteries incorporate tubular positive plates and separators of Porvic, a microporous plastic material. They are fully approved by the Ministry of Fuel and Power in the U.K. for use underground in mines.

Of fabricated steel construction, braced and electrically welded, the frame of each locomotive is designed to combine rigidity with light weight. Cut away to accommodate the axle boxes, which slide on hardened steel renewable strips, it is supported from the axles by helical springs, and each axle is driven by an independent motor driving through a single reduction spur gear enclosed in a sheet steel casing forming an oil bath. These 250 v. motors to B.S.S. 173 are of the traction type series one-hour rated at 30 h.p. and designed to work under tropical conditions at an altitude of 3,500 ft. above sea level.

New Screen Aids Diamond Recovery

The normal apparatus of the "pork-knocker" for recovering diamonds consists of a trommel and a box, and a chest with riffles placed between the trommel and the box when small amounts of gold are being collected.

A great saving in labour has recently been reported during the diamond recovery operations on the Mazaruni River, British Guiana. In this new device, a 16-mesh screen is placed between the trommel and the box. This screen allows the -16 sand to pass out of the tailings before reaching the box so that the +16 material only is hand jiggled to recover the diamonds. Any diamonds that would pass through a 16-mesh sieve are ignored. An even more efficient screen in use is similar, but instead of being fixed is suspended and is moved backwards and forwards by hand.

Motor Transport of China Clay

Under particularly arduous conditions in hilly districts in Cornwall, several Commer "Superpoise" 5 ton R6 diesel tippers operated by The Heavy Transport Co. Ltd. are averaging 12.98 m.p.g. running 450-500 miles each week.

The vehicles are used to transport china clay for the English China Clay Co., of which the operator is a subsidiary.



The Commer "Superpoise" diesel tipper

British Trade Fair, Copenhagen

Many manufacturers of mining and allied equipment will exhibit at the British Trade Fair, to be held in Copenhagen from September 29 to October 16, 1955.

Among the exhibitors, *Holm in Bros.* will show a representative range of products, including tractor-mounted and other portable compressors, a range of rock drills and accessories, road rippers, pneumatic picks and spades, riveting hammers, an impact wrench, scaling hammers and rotary pneumatic tools, including drills and grinders.

A single-tool portable compressor, the AT8D, is being shown for the first time on the Continent, the Tractair 13 is to be displayed, and rock drills to be shown include the medium weight SL9B arranged for dry drilling with a bar type handle and $\frac{1}{2}$ in. x $\frac{1}{2}$ in. chuck. Also shown is the small Silver Eight, and the dry version of the SL200, together with a range of drill rods and bits. A wide range of general-purpose pneumatic tools will be shown.

Permalit Ltd. will show nearly 200 different pieces of equipment and components used in the electrical, chemical and general engineering industries. A section of the stand will be devoted to allied products manufactured by the subsidiary companies of Hordern-Richmond Ltd. and Hydulignum-Jabroc (Tools) Ltd. A special feature of the stand will be a 25 ft. photographic mural, designed by Philip Kemp Ltd., which shows at a glance the many differing applications of these materials in industry.

Rotating machine components, switchgear parts, transformer details, traction components, and the like, as well as chemical, railway, textile and general engineering equipment will be shown.

British Geon Ltd. and *British Resin Products Ltd.* will exhibit the wide range of synthetic resins and plastics materials manufactured by the two companies in what is claimed as the most comprehensive display ever presented jointly by them outside the U.K.

New Heavy Duty Screens for Wet and Dry Operation

Pegson Ltd. announce the introduction of a new range of heavy duty, two-bearing, vibrating screens for the screening of dry or wet sand gravel, crushed stone, ore, coal and for many industrial applications.

Known as Pegson-Telsmith Vibro King screens, the range includes single, double and triple deck models with screen sizes, 8 ft. x 3 ft., 10 ft. x 3 ft., 10 ft. x 4 ft., 12 ft. x 4 ft., and 12 ft. x 5 ft. In test the Vibro King has proved so dependable and efficient for all kinds of screening that it can be used for finishing screening of all sizes of aggregate and sometimes for scalping service where the oversize to be handled is not too large or too heavy.

The entire vibrating mechanism, including vibrating unit and screen cloth, floats on springs. The vibrating unit itself is mounted on two heavy duty roller bearings and is equipped with two specially designed, patented, enclosed and automatically adjusted counterweights which prevent the screen jumping at critical speeds. The vibration which results, which is constant under light or heavy loads, is intense and circular in motion and is uniform on all parts of the screen cloth.

Vibro King screens can be supplied with a flat belt pulley or with grooved pulley for V-belt drive. The drive pulley may be mounted on either side. The anti-friction bearings of the cylindrical roller type are designed and constructed for heavy continuous duty and have been increased in size to prevent bearing fatigue. They need no adjustment and are carefully protected against the ingress of dust and moisture and loss of lubricant by the provision of both labyrinth and piston ring type seals. With ordinary attention and use of the correct lubricant the vibrating unit should last for years. Pegson-Telsmith, four-bearing, heavy duty scalpers are recommended for scalping duties ahead of primary and secondary crushers.

METALS, MINERALS AND ALLOYS

COPPER.—Copper is entering a most interesting phase since it has rarely been so difficult to forecast the immediate trend of prices. It is easy enough to state the influences; the difficulty arises in deciding which of them is likely to predominate.

Statistically, copper is as sound as ever, primarily because copper producers have tended to under-estimate the demand for the metal and expansion of productive resources has barely kept pace with the increase in consumption. The tightness of supplies has been much worsened by strikes—some serious—which to a certain extent has been occasioned by the very prosperity of the producers. On both sides of the Atlantic industry is operated at exceedingly high levels and there is no sign of any faltering. There is a particular—and strong—pressure in the United States to build up stocks to avoid heavy tax assessments under LIFO before the year is out. All of this points to strong copper prices hovering around record levels.

Yet copper in London was falling throughout most of last week, and, in America, there is no panic, if there is still keenness, to acquire immediate metal. It might be thought that tighter credit policies, now almost universal, are having their effect. But the latest figures show that during July United Kingdom stocks rose sharply from 48,491 tons to 78,475 tons of refined and from 15,765 tons to 21,153 tons of blister. Even so, stocks are extremely modest in relation to consumption so that even if stocks were to be pared the effect on prices would not be serious. Only if the credit policies are carried to a point at which they would curtail overall production—and this is not intended—will tighter credit tend seriously to drag down prices. A likelier explanation of London's fall is the fear that 100,000 tons—or some of it—of American stockpile copper previously acquired from Chile will be released.

The possibility is remote. The "emergency" required before release can be made does not exist. Furthermore, conditions are difficult enough with D.P.A. copper only partially sealed from the market; if stockpile copper were to be made available sane commercial marketing of the metal would become virtually impossible. The Administration has been so heavily criticized, the world over, for dithering about its cotton stocks that it is unlikely to run into similar trouble on copper. (The Administration is also likely to keep clear of Representative Patterson's suggestion that surplus cotton and agricultural produce should be bartered in exchange for copper. Anybody who has any copper to sell has not the slightest difficulty in getting rid of it at a handsome price, and there seems no obvious reason why copper producers should want to have American surplus cotton in exchange. Such a deal indeed would only appear attractive if the copper were bought at world prices against cotton sold well below world prices. The Administration simply would not dare to try to make good its copper shortage by dumping cotton.) If the fear that stockpile copper may become available is not well founded it serves to show how little confidence there is in the present level of copper prices and how vulnerable they are to speculation and rumour in spite of an underlying statistical soundness. It is this combination of statistical soundness and a patently uneconomic price level that makes the present situation so puzzling.

Meanwhile, American consumers continue to be faced with three prices; 43 c. from the main producers, 50 c. from the customers' smelters, and 51 c. for dealers' metal. It is obvious that the American price structure is, creakingly, undergoing a major change. Partly, this must reflect an admission that the policy of holding copper to "reasonable" levels has failed because it was always impracticable; partly it may reflect less fear of aluminium as a competitor (aluminium may well have made most of the inroads it is likely to make while the copper interests have moved steadily into aluminium production) and partly a determination to keep prices sufficiently close to the European levels as to ensure a good supply of Chilean metal. There are many reasons for disliking the use of stockpile copper to iron out dislocations; to them must be added the fact that a release of 100,000 tons would tend to obscure the salutary lessons on pricing policy that the American producers have been learning.

A strike has broken out in Anaconda's Chuquicamata plant in Chile. The strike was occasioned by a dispute among clerical workers and may, therefore, be slightly more easy to settle. A prolonged strike would, of course, be disastrous and even a short one in present circumstances may have a quite disproportionate effect on prices.

The secretary of the Northern Rhodesian European Mineworkers' Union has asked R.S.T. and Anglo American to bring their agreement with the Union on African advancement into line. It is not clear from the announcement whether the

secretary envisages tripartite negotiations or whether he will ask R.S.T. and Anglo American to reach accommodation on their own. If the latter interpretation is correct the move is an interesting one.

Anaconda has put a proposal to the Chilean Government seeking tax remission under the new copper law on investment in its properties. It is proposed to spend \$20,907,000 on Chuquicamata and Potrerillos. Chuquicamata's output by this plan would be raised by as much as 50,000 tons of copper a year. Potrerillos' new plants would allow the refining of 37,500 tons now produced in the form of blister. Apart from technical facilities there will be heavy expenditure on welfare amenities.

LEAD.—Lead has been quite a strong market and 15 c. per lb. New York in the United States. Lead was sought last week by G.S.A. for delivery by November 15; little metal is expected to be acquired. Lead stocks on August 1 were 30,205 tons against 34,560 a month earlier; on the first seven months, stocks have dropped by 53,000 tons.

U.S. domestic mine output during the first seven months of this year continues to show a modest increase at 197,701 s.tons against 186,022 s.tons for the same period a year ago. The continuing importance of secondary lead production in the States is underlined by the recently published Bureau of Mines statistics for 1954, which show a secondary lead recovery of 486,737 s.tons greater (for the ninth successive year) than domestic mine production (318,985 s.tons last year), and greater also than last year's imports (443,505 s.tons).

TIN.—Tin has continued a strong market in New York, with prices around 97 c. The settlement of the New York dock strike made spot supplies of tin readily available but a real slide in prices was avoided by the long standing threat of a strike at the Eastern Smelting Co.'s plant at Panang. This strike now appears likely to materialize. After protracted negotiations, strike notices have been handed in to take effect on October 4. The severe labour unrest that has hit Malaya and Singapore this year has scarcely affected the tin industry directly; a strike at Penang would be a very different matter. With an output averaging 3,000 tons a month it is responsible for roughly one-fifth of the world total. There is, of course, spare melting capacity but it is doubtful whether diversions could prove fully effective apart from the fact that they would increase the prospect of spreading the strike.

A. Strauss' monthly review makes a fresh and timely supply-demand estimate for 1955 against which the prospect of a Penang strike should be placed. A. Strauss had previously estimated world production in 1955 at 167,000 tons, the figure reached in 1954. First half figures were 77,500 in 1954 and 80,700 in 1955; output in the second half of the year normally surpasses that of the first half so that 167,000 should be safely reached. (Of course, strikes in Malaya would alter the picture. A. Strauss assumes for the sake of argument that there will be none; but if there were none surely 167,000 tons might be comfortably surpassed?) 1955 tin consumption under the revised A. Strauss estimate is up 4,000 tons to 148,000 tons. The revision is based on half-yearly consumption figures. Thus if 23,000 tons are to go to the American stockpile there will be a deficit of 4,000 tons. Of course, since the stockpilers have tin pouring out of their ears they may not continue their stockpiling to an extent that would make them responsible for "gouging"; the figure of 23,000 tons is not unchangeable and the American contracts are only short term. Nevertheless, A. Strauss is right in showing tin as drifting steadily from a state of comfortable balance to one of possible shortage.

Students of Malayan affairs will have noted the crisis caused by the Sultan of Johore's remarks on his birthday celebration on the need not to hasten independence. Subsequently, the newly elected Administration boycotted the remainder of the celebrations. The incident highlights two of the difficulties in Malaya's march towards independence; that of reconciling differing views on the appropriate pace and that of finding an appropriate place for the native rulers in the new constitution.

ZINC.—Zinc has been featureless in the United States with demand moderately good at 13 c. per lb. East St. Louis. The G.S.A. has asked for offers to the stockpile but little zinc is expected to be forthcoming; the only interest in the request lies in the fact that G.S.A. is still interested at the price. Mr. C. R. Ince, president of St. Joseph Lead Co., told a diecasters' meeting last week to expect little or no change in the price of zinc, possibly throughout 1956. Since it was the St. Joseph Lead Co. which has tended to set the pace in raising the price of zinc this forecast comes from an interesting quarter.

U.S. domestic mine production during the first six months of this year is reported at 256,142 s.tons against a total of 465,245 s.tons for the whole of 1954.

ALUMINIUM.—Generally speaking, continued talk about the possibilities of aluminium being substituted for copper because of the present price differential operating against the red metal, has not come to very much and the belief is gaining ground that the potential market for aluminium lies with it being used as a substitute for, or in conjunction with, steel.

However, there is no doubt that the present high price which copper now commands is causing industrialists to think much more seriously about substituting other and cheaper metals for copper. In this connection, some of the large U.S. automobile manufacturers are now studying the use of aluminium as replacement for copper and brass in car radiators, although technical difficulties have not yet been ironed out. Nevertheless, this could be a good deal more than a mere straw in the wind. U.S. electrical companies are also becoming more interested in the use of aluminium instead of copper for electric wire. A development which may, in the future, have some impact on copper demand is that now announced by Reynolds Metals Co., which has introduced a new concept in the winding of electromagnetic coils for use in transformers, solenoids and some direct current motors which, for the first time permits aluminium to be used at a price competitive with that of copper. By using aluminium strip, instead of wire, the company states it can produce lightweight, compact coils capable of operating at high temperatures and with excellent heat dissipation features. Conventional insulation around wires is made unnecessary by anodizing the aluminium strip so that a film of aluminium oxide only 2/10,000th of an inch thick covers the entire surface. In most cases, the coil weight is about half that of a comparable copper unit.

ASBESTOS.—The demand for asbestos fibre in the U.S. continues at a very satisfactory level and so far is running ahead of 1954 by about 8 to 10 per cent. There is no shortage of supplies and all demands are being met. The Philadelphia organ, *Asbestos*, also reports that large proportions of the Canadian asbestos output is being shipped in paper containers rather than in the traditional jute or loosely packed valve type bags—a feature which is meeting with a very favourable response from the asbestos consuming industry.

PLATINUM.—The U.S. platinum market remains firm. Demand is outstripping supply and purchases have been made in Europe where the current market price is around \$95 per oz., delivered New York.

U.S. platinum trade circles were interested in the Soviet wish to expand trade with the United States. It is understood that Washington, would be pleased to enter into negotiations with the U.S.S.R. for the sale of surplus farm products in exchange for Soviet platinum for the U.S. stockpile. If such an arrangement eventuates, the free market price for platinum may well advance sharply.

QUICKSILVER.—The Spanish Director General of Mines has authorized the installation of a quicksilver distillation plant in Castaraz, Granada, which will have two distillation furnaces of Spanish design and construction. The plant, it is reported, will be ready for operation within a year. At present, the only quicksilver distillation plant in Spain is that belonging to the Spanish state-owned monopoly, Minas de Almaden, which operates two new furnaces purchased from the United States.

URANIUM.—A preliminary estimate by the South African Department of Excise and Customs has placed a value on the exports of prescribed materials (uranium and thorium) for the month of June at £2,582,707 compared with £2,196,614 in May. The accrued total, therefore, for the first six months of this year is £12,497,001 against £5,844,065 in the comparable period in 1954.

The London Metal Market

(From Our Metal Exchange Correspondent)

The copper market developed easiness owing to news that the Office of Defence Mobilization was to hear the plea of fabricators who were urging that 100,000 tons of stockpile copper should be released to industry, and as a consequence consumers were inclined to hold back. However, according to American trade sources it is now considered unlikely that industrial consumers will get any copper from the strategic stockpile, and some recovery in the market has taken place. In America demand continues but supplies are rather tight, although producers report that output is nearly back to normal. In the

afternoon of Wednesday, September 21, news was received of yet another strike at the Anaconda plant, and the market was considerably firmer.

The tin market has taken on a firmer tone influenced by the fact that the workers at the Eastern Smelting Co.'s works at Penang had, following the deadlock in their negotiations with the company, given 14 days' notice to strike. If agreement is not reached in the meantime the strike is due to commence on October 4. Following the settlement of the New York dock strike good demand has developed in the U.S. On Thursday morning the Eastern price was equivalent to £770½ per ton c.i.f. Europe.

Lead has shown no special feature although the rate of consumption continues good on this side of the Atlantic. In America there has been a moderate demand, but the change by some motor car manufacturers to larger-capacity batteries is expected to increase consumption for this purpose.

The zinc market has fallen back a little from the levels seen after the recent U.S. price advance, but consumer demand keeps up well in spite of the U.K. brass trade being somewhat quiet.

Closing prices and turnovers are given in the following table:

	September 15 Buyers	Sellers	September 22 Buyers	Sellers
Copper				
Cash	£382	£382½	£380½	£381½
Three months	£377½	£378	£378	£379
Settlement	£382½		£381½	
Week's turnover	5,300 tons		3,900 tons	
Tin				
Cash	£747½	£748	£755	£756
Three months	£748	£748½	£756	£757
Settlement	£748		£756	
Week's turnover	620 tons		580 tons	
Lead				
Current half month	£107½	£107½	£107½	£107½
Three months	£107½	£107½	£106½	£107
Week's turnover	3,200 tons		1,400 tons	
Zinc				
Current half month	£92½	£92½	£92½	£92½
Three months	£91½	£92	£92	£92½
Week's turnover	3,950 tons		2,725 tons	

OTHER LONDON PRICES — SEPTEMBER 22

METALS

Aluminium, 99.5%	£171 per ton	Nickel, 99.5% (home trade)	£519 per ton
Antimony—		Osmium, £24/27 oz. nom.	
English (99%) delivered, 10 cwt. and over £210 per ton		Osmiridium, £40 oz. nom.	
Crude (70%) £200 per ton		Palladium, £7 0s./£7 10s. oz.	
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.		Platinum U.K. and Empire Refined £29 oz. Imported £32 10s. oz.	
Bismuth		Rhodium, £40	
(min. 1 ton lots) 16s. lb. nom.		Ruthenium, £17 oz.	
Cadmium 11s. 6d.		Quicksilver, £92/£94 15s. ex-warehouse	
Chromium, 6s. 11d./7s. 4d. lb.		Selenium, 72s. nom. per lb.	
Cobalt, 21s. lb.		Iridium, £30 oz. nom.	
Gold, 250s. 10d.		Manganese Metal (96%-98%) £269 according to quantity	
Iridium, £30 oz. nom.		Silver, 79½d. f.oz. spot and 79½d. f'd	
Manganese Metal (96%-98%)		Tellurium, 16s. lb.	
£269 according to quantity			
Magnesium, 2s. 4d. lb.			

ORES, ALLOYS, ETC.

Bismuth	50% 7s. 3d. c.i.f. 30% 5s. 0d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semi-friable) 48%	£13 per ton c.i.f.
Refractory 45% ..	£13 per ton c.i.f.
Smalls 42% ..	£10 2s. 6d. per ton c.i.f.
Magnesite, ground calcined ..	£26-£27 d/d
Magnesite, Raw ..	£10-£11 d/d
Molybdenite (85% basis) ..	105s. 0d.-108s. 0d. per unit c.i.f.
Wolfram and Scheelite (65%) ..	272s. 6d./277s. 6d. c.i.f.
Tungsten Metal Powder ..	21s. 7d. nom. per lb. (home)
(98% Min. W.) ..	
Ferro-tungsten (80%-85%) ..	18s. 7d. nom. per lb. (home)
Carbide, 4-cwt. lots ..	£39 3s. 9d. d/d per ton
Ferro-manganese, home ..	£54 10s. 0d. per ton
Manganese Ore Indian c.i.f.	
Europe (46%-48%) basis 100s. freight ..	84d. per unit c.i.f.
Manganese Ore (38%-40%) ..	69d. per unit
Brass Wire ..	3s. 5½d. per lb. basis
Brass Tubes, solid drawn ..	2s. 7½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Mr. Butler's visit to Istanbul has brought about a revival of confidence in sterling. The gilt-edged market finished the week on a firm tone. Elsewhere, markets were quiet but there was selective demand for certain leading industrial shares.

If Mr. Butler's statement encouraged markets generally, it had the effect of sharply reducing prices of South African gold mining shares. Continental buyers had recently been picking older producers and some of the leading finance houses. When his intention not to devalue the pound was made abundantly clear, these speculators tried to unload some of their purchases on a reluctant market which caused sharp falls in price. Mr. Butler's qualified support of Mr. Louw can be considered as a long term encouragement for the much tried investors in gold mining companies.

Apart from these general trends, there were one or two striking features among individual Rand mines. Heavy selling of Dominion Reef shares, much of it emanating from Johannesburg, caused the price to fall as low as 28s. Later some recovery set in. No satisfactory explanation for this movement has yet been forthcoming. There was a steady demand for Van Dyk shares and, as a result, these moved against the general trend. Here again, no explanation has been provided.

In the Orange Free State, prices of most of the leading companies fell sharply, Western Holdings and Orange Free State Investment Trust shares being the chief sufferers. St. Helena, however, held their ground well and only a slight decline was recorded. Freddie's Consolidated and Geffries also maintained their position, in this case there were unconfirmed rumours that the Van Den Heversrust area was being actively examined.

In the West African section, Kwahu are paying 45 per cent for the year, the best distribution since 50 per cent in 1947 and the increased dividend by Amalgamated Banket brought in some inquiry for these shares. Profit-taking caused a setback in Ashanti. The interim dividend is being maintained at the same rate as last year.

Finance	Price Sep. 21	+ or on week	Rand Gold contd.	Price Sep. 21	+ or on week	Diamonds and Platinum	Price Sep. 21	+ or on week	Tin (Nigerian and Miscellaneous) contd.	Price Sep. 21	+ or on week
African & European ..	3 1/2	- 1/2	W. Rand Consolidated	43 1/4	- 1/3	Anglo American Inv. ..	9 1/2	-	Gold & Base Metal ..	2 1/2	-
Anglo-American Corpn. ..	9 1/2	+ 1/2	Western Reefs	39 4/4	-	Casta	29 1/2	+ 6d	Jantar Nigeria	6 1/2	+ 1 1/2
Anglo-French	21 1/2	- 3d	O.F.S. Gold	7 1/2	-	Cons. Diam. of S.W.A. ..	7 1/2	+ 1/2	Jon Tin Asia	14 1/2	-
Anglo-Traffic Control ..	26 1/2	+ 7 1/2	Freddies	7 1/2	- 3d	De Beers Ptd. Bearer ..	6 1/2	- 1/2	Kaduna Prospectors	2 1/2	-
Central Mining (El shrs) ..	47/-	- 1/3	Freddies Consolidated ..	5 1/2	- 3d	Pots Platinum	10/-	- 6d	Kaduna Syndicate	3 1/2	-
Consolidated Goldfields ..	62/-	- 6d	P.S. Geduld	4 1/2	- 1/2	Waterval	16 1/2	- 3d	London Tin	9 1/2	- 4 1/2
Consol. Mines Selection ..	42 1/2	- 1/3	Geffries	17 1/2	-	United Tin	2/-	-	United Tin	2/-	-
Fast Rand Consols.	2/-	-	Geoffries	17 1/2	-	Silver, Lead, Zinc					
H.E. Prop.	4 1/2	- 1/2	Harmony	32 1/2	- 1/2	Broken Hill South	58 1/2	-	Burma Mines	2 1/2	+ 4 1/2
Johnnie's	8 1/2	- 1/2	Lorraine	7 1/2	- 7 1/2 d	Bancroft	44/-	- 9d	Consol. Zinc	55 1/2	+ 3d
Rand Mines	44 1/2	- 9d	Lydenburg Estates	18 1/2	- 1/2	Chartered	73/-	- 14d	Lake George	14/-	+ 1 1/2 d
Rand Selection	47 1/2	- 1/2	Merriespruit	9 1/2	- 10 1/2 d	Messina	37 1/2	- 14d	Mount Isa	63 1/2	- 6d
Union Corporation	51 1/2	- 2/9	Middle Wits	14 1/2	- 9d	Noranda	16 1/2	- 6d	New Broken Hill	41 1/2	- 9d
Vereeniging Estates	4/-	-	President Brand	72 1/2	- 1/2	Rhodesia, Anglo-American	6 1/2	- 9d	North Broken Hill	78 1/2	- 6d
Writs	41 1/2	- 1/2	President Steyn	36 1/2	- 1/2	Rhod. Katanga	26 1/2	- 9d	Rhodesian Broken Hill	15/-	-
West Wits	38 1/2	- 1/2	St. Helena	31 1/2	- 3d	Rhodesian Selection	52 1/2	- 4d	San Francisco Mines	24 1/2	-
Rand Gold			Virginia Ord.	12 1/2	- 10 1/2 d	Rohokane	44 1/2	- 21	Uruwira	6 1/2	-
Blyvoors	27 1/2	- 1/2	Welkom	19 1/2	- 1/2	Rio Tinto	3 1/2	-	Silver, Lead, Zinc		
Brakpan	7 1/2	-	Western Holdings	4 1/2	- 1/2	Rio Tinto Antelope	28 1/2	- 14d	Broken Hill South	58 1/2	+ 4 1/2 d
Buffelsfontein	38 1/2	- 6d	West African Gold	2 1/2	-	Selection Trust	4 1/2	- 1/2	Burma Mines	2 1/2	-
City Deep	12 1/2	-	Amalgamated Banket	2 1/2	+ 1 1/2 d	Tanks	8 1/2	- 1/2	Consol. Zinc	55 1/2	+ 3d
Consol. Main Reef	21 1/2	- 7 1/2 d	Ariston	6 1/2	- 1 1/2 d	Tharsis Sulphur Br.	6 1/2	- 1/2	Lake George	14/-	+ 1 1/2 d
Crown	2 1/2	- 1/2	Ashanti	23 1/2	- 10 1/2 d	Tin (Eastern)			Mount Isa	63 1/2	- 6d
Daggas	2 1/2	- 1/2	Bibiani	4 1/2	-	Ayer Hitam	22 1/2	- 1 1/2 d	New Broken Hill	41 1/2	- 9d
Dominion Reefs	31 1/2	- 6d	Bremang	1 1/2	-	Gopeng	9 1/2	- 1 1/2 d	North Broken Hill	78 1/2	- 6d
Doornfontein	25 1/2	- 6d	G.C. Main Reef	2 1/2	-	Hongkong	7 1/2	-	Rhodesian Broken Hill	15/-	-
Durban Deep	32 1/2	- 1/2	Konongo	2 1/2	-	Ipooh	22 1/2	-	San Francisco Mines	24 1/2	-
E. Champs.	5 1/2	- 3d	Lyndhurst Deep	1 1/2	-	Kamunting	10/-	-	Uruwira	6 1/2	-
E. Daggas	10 1/2	- 6d	Marlu	7 1/2	-	Kinta Tin Mines	15 1/2	- 1 1/2 d	Silver, Lead, Zinc		
E. Geduld (4s. units) ..	31 1/2	- 9d	Taquah	2 1/2	-	Malayan Dredging	9 1/2	- 4 1/2 d	Broken Hill South	58 1/2	+ 4 1/2 d
E. Rand Props.	3 1/2	- 1/2	Western Selection	9 1/2	-	Pahang	12 1/2	- 3d	Burma Mines	2 1/2	-
Geduld	4 1/2	- 1/2	Australian Gold	13 1/2	- 10 1/2 d	Penakalen	10 1/2	-	Consol. Zinc	55 1/2	+ 3d
Govt. Areas	7 1/2	-	Gold Mines of Kalgoorlie	11 1/2	-	Petaling	10 1/2	-	Cape Asbestos	9 1/2	- 4 1/2 d
Grootvlei	22 1/2	- 1/2	Great Boulder Prop.	19 1/2	- 1/2	Rambutan	20/-	-	C.P. Manganese	33 1/2	-
Hartbeestfontein	36 1/2	- 1/2	Lake View & Star	19 1/2	- 1/2	Siamese Tin	8/-	-	Natal Navigation	3 1/2	-
Libanon	8 1/2	- 10 1/2 d	Mount Morgan	21 1/2	- 1/2	Southern Kinta	19 1/2	- 6d	Turner & Newall	102 1/2	- 2 1/2
Luipaards Vlei	20 1/2	-	North Kalgoorli	7 1/2	- 1 1/2 d	S. Malayan	8 1/2	- 7 1/2 d	Wankie Colliery	17 1/2	- 4 1/2 d
Marievale	23 1/2	-	Sons of Gwalia	4 1/2	-	S. Tionoh	8 1/2	- 4 1/2 d	Withbank Colliery	4	-
New Kleinfontein	6 1/2	-	Western Mining	9 1/2	- 1 1/2 d	Sungei Kinta	8 1/2	- 4 1/2 d	Canadian Mines		
New Pioneer	14 1/2	-	Miscellaneous Gold	1 1/2	-	Tekka Taiping	7 1/2	-	Dome	\$29	+ 1
Randfontein	55 1/2	- 2/3	Great Boulder Prop.	1 1/2	-	Tionoh	8 1/2	- 6d	Hollinger	\$40 1/2	- 1 1/2
Robinson Deep	17 1/2	- 6d	Lake View & Star	1 1/2	-	Attock	40 1/2	-	Hudson Bay Mining	\$127	-
Rose Deep	10 1/2	- 3d	Mount Morgan	1 1/2	-	Burmah	3 1/2	-	International Nickel	\$151 1/2	- 1
Sinner & Jack	4 1/2	- 4 1/2 d	North Kalgoorli	1 1/2	-	Amalgamated Tin	13/-	-	Mining Corp. of Canada	\$82	- 1
S.A. Lands	22 1/2	-	Sons of Gwalia	1 1/2	-	Berali Tin	38 9/2	- 3d	Noranda	\$109	- 1 1/2
Spring	3 1/2	-	Western Mining	1 1/2	-	Berali Tin	38 9/2	- 3d	Quemont	\$104	+ 1 1/2
Stilfontein	28 1/2	-	Misellaneous Gold	1 1/2	-	Berali Tin	38 9/2	- 3d	Yukon	4 1/2	+ 1 1/2 d
Sub Nigel	35 1/2	-	Cam & Motor	8 10 1/2	-	Tionoh	8 1/2	- 6d	Oil		
Vaal Reefs	31 1/2	- 6d	Champion Reef	4 1/2	- 3d	British Petroleum	5 1/2	-	British Petroleum	5 1/2	-
Van Dyk	4 1/2	+ 10 1/2 d	Falcon Mines	7 1/2	-	Apex	34 1/2	-	Apex	34 1/2	-
Venterspost	15 1/2	-	Globe & Phoenix	25 1/2	- 6d	Attock	40 1/2	-	Attock	40 1/2	-
Vlakfontein	17 1/2	-	G.F. Rhodesian	6 1/2	- 3d	Burmah	3 1/2	-	Burmah	3 1/2	-
Vogelstruisbult	30 1/2	- 1/2	Motapa	1 1/2	-	Canadian Eagle	51 1/2	-	Canadian Eagle	51 1/2	-
West Driefontein	5 1/2	-	Mysore	3 1/2	-	Bisichi	5 1/2	-	Mexican Eagle	23 1/2	- 3d
			Nundydroog	7 1/2	-	Bisichi	5 1/2	-	Shell	7 1/2	+ 1 1/2
			Oregum	4 1/2	+ 1 1/2 d	Bisichi	5 1/2	-	Trinidad Leasehold	40 1/2	- 1 1/2
			St. John d' El Rey	14 1/2	- 3d	Bisichi	5 1/2	-	T.P.D.	26 1/2	+ 2 1/2
			Zama	60/-	- 7 1/2 d	Bisichi	5 1/2	-	Ultramar	29 1/2	+ 3d

COMPANY NEWS AND VIEWS

Expansion of London Tin's Investments

The Consolidated balance sheet in respect of the year ended April 30, 1955, of the London Tin Corporation together with its wholly-owned subsidiary companies shows a sharp advance in holdings of quoted investments to £4,066,086 from £3,597,965. These securities had a market value of £5,846,016 as at April 30. Unquoted investments figured on the balance sheet at a value of £67,424 as against £63,544. Investments in partly-owned subsidiary companies (whose accounts were hitherto incorporated in the group consolidated balance sheet) were shown at £375,944 as against an adjusted comparative figure of £413,592. These shares had a market value of £1,857,555.

During the past financial year total revenue gained by the London Tin Corporation and its wholly-owned subsidiaries amounted to £1,471,767 as compared with £1,265,235 previously. Of this figure dividends and interest comprised £1,247,991 as compared with £1,118,075 while shareholding operations provided £216,202 as against £155,472. After taxation of £740,587 (£744,788) net profits moved up to £731,180 from £520,447. Dividends absorbed £528,536 (£477,607) and the unappropriated balance of £582,748 compared with £509,104.

Due to the removal of the Corporation's non wholly owned subsidiaries Lower Perak and Berjuntai Tin Dredging companies from the group accounts, it is now necessary to consider their figures in conjunction with those of the parent. In the case of Lower Perak, in which the Corporation's holding amounts to 59.6 per cent (70.7 per cent) total revenue rose steeply to £1,098,066 from £752,813. After taxation of £172,000 (£107,752) and dividends which absorbed £346,500 (£161,700) the balance carried forward remained virtually unchanged at £313,709 (£311,701). Berjuntai's revenue made small advance to £393,990 from £332,662. Net profits after tax came out at £119,613 (£75,948) of which dividends absorbed £107,100 (£71,400). After a transfer of £25,000 to reserve unappropriated profits dropped to £37,406 from £49,893. The Corporation holds 74.2 per cent of this company. Another subsidiary in which London Tin has the substantial interest of 77.9 per cent (sharply up from the previous figure of 58 per cent) namely, Talerng Tin Dredging, experienced a contraction of profits from dividends to £8,463 from £16,925. After all expenses including taxation the balance for the year ended April 30, 1955, was £4,497 as compared with £8,862 previously. The sum carried forward rose to £22,520 from £18,023.

Mr. J. Ivan Spens is chairman. Meeting, London, October 14.

Kwahu Pays 15 Per Cent More

With the recommendation of a final dividend of 30 per cent on its issued ordinary capital of £110,906 in 2s. stock units, Kwahu Mining Co. (1925) is paying a total of 45 per cent for the year ended June 30, 1955, as against only 30 per cent previously.

As the table below shows, total revenue in respect of the past year was substantially increased. There is, however, a technical reason for this which may account for the major part of the gain. Last year, Mr. O. V. G. Hoare, the chairman, pointed out in his statement to shareholders that the reason for the company's lower receipts from dividends and interest was that only part of the distribution from Gold Coast Main Reef—in which Kwahu has a large shareholding—had been received. It is not, therefore, surprising that this loss should be made up in the past year but how far this has actually been the case must, of course, await the chairman's statement to shareholders at the company's meeting which is to be held in London on October 25. Meanwhile, an examination of the breakdown of total revenue discloses that dividends and interests (gross) brought in £28,063 as against £16,746. Apart from this, shareholding operations were again profitable and amounted to £19,507 as compared with £14,434. On the other hand, sundry revenue was only £653 as against £4,200.

<i>Year to</i>	<i>Total</i>	<i>Net</i>	<i>Divi-</i>	<i>To</i>	<i>Carry</i>	
<i>June 30</i>	<i>Revenue</i>	<i>Expenses</i>	<i>Profit</i>	<i>dends</i>	<i>Reserve</i>	<i>Forward</i>
	£	£	£	£	£	£
1955	48,223	10,475	37,748	28,281	15,000*	16,447
1954	35,380	8,221	27,159	18,300	7,500	16,412

* Including £7,500 arising from debt acquired on amalgamation with Mount Elliott transferred to Capital Reserve.

Kwahu's business is that of an investment company. But amongst the securities in its portfolio which include a number of West African gold, tin and columbite producers, and

a stake in the new and expanding South African Orange Free State Goldfield, there are two major holdings. These are firstly—as mentioned above—Gold Coast Main Reef and, secondly, the Esperanza Copper and Sulphur Co. which is opening up a promising property in Cyprus. This latter company has not yet reached the dividend stage but current progress reports suggest that such an event should not be too far distant. Of course, political disturbances in Cyprus at the present time must undoubtedly be causing the company some trouble. Nevertheless, providing that no serious disruption of labour occurs, Esperanza's future should be bright.

Confused Kolar Nationalization Issue

Some confusion would appear to exist over the question of whether the Kolar Gold Mines of Mysore, India, should be nationalized or not.

Although the Chief Minister of Mysore has gone on record publicly that he intends to resign if his intention to bring about nationalization fails, he is reported informally to favour adherence to the stated industrial policy of the Central Government. This does not envisage future state ownership of existing mines.

In view of this apparent paradox it is well to bear in mind the difficulties which at present beset Kolar mining operations, and which could hardly be expected to improve under nationalization. These include the fall in the price received for gold over recent years together with the technical state of the mines themselves. Depths have now been reached where further operations would be risky and would call for the most expert supervision.

Puket Tin's High Grade

An outstanding increase in the grade of tin ore recovered, from 0.459 lb. to 0.821 lb. per cu. yd., took place at Puket Tin Dredging's Malayan property during the past financial year ended December 31, 1954. This event, together with a rise in the yardage of ground dredged to 1,848,731 cu. yds. from 1,524,364 cu. yds., resulted in the recovery of 678 tons of tin ore as compared with 312 tons previously.

The company's full reports and accounts show that total revenue earned rose sharply to £308,749 from £144,988. After expenses and taxation the balance carried to appropriation account was £83,651 (Dr. £3,387). Dividends of 8 2/5d. absorbed £33,687 (nil) and after a transfer to general reserve of £23,912 (nil), the balance carried forward moved up to £25,378 from £20,672.

£1,570,000 Compensation for "Casts"

In return for giving up the major part of its diamond rights previously held over virtually the whole of Sierra Leone, the wholly owned subsidiary of Consolidated African Selection Trust—Sierra Leone Selection Trust—is to receive £1,570,000 compensation from the Sierra Leone Government. This was the major feature of an agreement conducted between Consolidated African Selection Trust, the Colonial Office and a Sierra Leone Government delegation in London earlier this week.

Another aspect of the agreement provides for a total of 450 sq. miles including all existing workings being retained by Sierra Leone Selection Trust. Reasonable opportunity over a period not less than ten years will also be given to the company to prospect and mine for deep diamond deposits in the Colony.

The Sierra Leone Government has undertaken not to grant before 1975 to any applicants other than Sierra Leoneons or companies they control, any diamond prospecting licences or leases without first offering them to Sierra Leone Selection Trust. Moreover, in the event of non-acceptance, the leases will not be offered elsewhere on better terms.

It has been agreed in principle that the local government in Sierra Leone will undertake to market all stones mined from outside Sierra Leone Selection Trusts' area through the Diamond Corporation.

George Cohen to Make 2 for 3 Scrip Issue

There are altogether too few companies registered in the United Kingdom which give adequate if early statistical data regarding their full trading experience. In this respect George Cohen Sons and Company provide a good example of how full

disclosures of turnover figures and profit margins, etc., can assist the investor in arriving at a reasonable assessment of a company's merit.

Dealing specifically with the result of the George Cohen 600 group's activities during the year ended March 31, 1955, it can be seen that turnover rose to £19,133,000 from £17,818,000. As total costs, less sundry income, amounted to £17,716,000 as compared with £16,604,000 some saving under this heading can be seen to have been effected. At all events, group net earnings made a substantial advance to £1,417,000 from £1,214,000, which, when expressed as percentage of the turnover, shows a profit margin of 7.4 per cent as compared with 6.8 per cent during the preceding year.

<i>Year to Mar. 31</i>	<i>Group Profit</i>	<i>Taxa- tion</i>	<i>Net Profit</i>	<i>Divi- dends</i>	<i>To Reserve</i>	<i>Carry Forward</i>
	£	£	£	£	£	£
1955	1,417,417	771,257	646,160	165,188	333,088	214,543
1954	1,214,536	873,954	340,582	136,125	100,000	250,677

Referring in his statement to shareholders to the company's capital structure, Mr. Cyril Cohen, chairman and managing director, stated that application would shortly be made to the capital issues committee for the capitalisation of a further £1,000,000 from the group's reserves. It will be recalled that in February, 1953, £900,000 was capitalised into ordinary stock.

Should the proposal be approved, a scrip issue of two new stock units for every three held would be made. In this event, provided the group financial position and profits justify it, an interim dividend of 3½ per cent would be paid on the new ordinary stock. This dividend, if related to the present ordinary capital, would represent a rate of nearly 6 per cent as compared with 3½ per cent paid for some years. Mr. Cohen stressed, how-

ever, that his statement should, in no way, be taken as an indication that total distribution for the current year would be higher.

A particularly interesting aspect of Mr. Cohen's speech concerned the state of the group order book. At present there would appear to be no falling off. But it was to be expected that the present credit squeeze would in time exert an adverse influence by slowing down demand for goods both capital and otherwise. As there is a section of opinion which attributes to a large extent the present inflated level of imports to the recent boom in factory building, it seems possible that this will, indeed, prove to be the case.

Meeting, London, September 28.

Great Western Consolidated's Hopeful Outlook

At the annual meeting of Great Western Consolidated N.L., held early last week, Mr. G. Lindsay Clark, chairman, stated that gold production is expected to increase, that larger ore-bodies ought to appear in depth and that there is every hope that in due course revenue will disclose a surplus over costs provided development results came up to expectation.

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ESTIMATED LIFE OF DREDGING AREAS

MR. J. H. RICH'S STATEMENT

The fifty-third annual general meeting of Tronoh Mines, Limited, was held on September 16, 1955, at the Registered Office, 73 Cheapside, London, E.C.2. Mr. J. H. Rich, chairman of the company, presided. The following is an extract from the statement of the chairman circulated to shareholders:—

The working profit for the year ended December 31, 1954, is £731,864. After providing £405,613 for taxation, there remains a balance for the year of £329,393.

THE DREDGING AREAS

The latest estimates of the "lives" of the remaining areas of the dredges, given normal continuous running, are as follows:—No. 1 dredge, 17 years; Nos. 4, 5 and 8 dredges, 8½ years each.

A considerable area of the Kroh Forest Reserve in Perak was prospected but unfortunately with most disappointing results. This work was rendered possible by the authorities who supplied a considerable protecting force, and I would like to take this opportunity of expressing appreciation of their co-operation. The barren results of this venture emphasize the importance of adopting an energetic prospecting policy as it is only to be expected that much prospecting will have to be done before finding a payable area. Applications to prospect in different parts of the country have been lodged but so far permission has not been granted. If these applications were dealt with more expeditiously than they appear to be at present it would at least afford some evidence that the authorities do appreciate the urgency of prospecting.

The harmonious relations which have existed for years between the company and its labour force were interrupted in March of this year when a strike took place at the Kampar section as a result of the dismissal of three employees. The three dredges were at a complete standstill for only a short time. As new labour was engaged, first one dredge and then another was re-started and within about three weeks from the start of the strike all three dredges were again working. The serious feature about this strike is that it closely follows the pattern of the strikes which are so widespread in Singapore and which are Communist inspired.

It is once more gratifying to report the absence of any acts of terrorism on the property although there has been some activity in adjoining areas.

POLITICAL CONDITIONS IN MALAYA

Turning to matters of a more general nature, the recent election of members to the newly constituted Legislative Assembly of the Federation of Malaya is the first election of its kind to be held in the Federation and is the first step towards self-

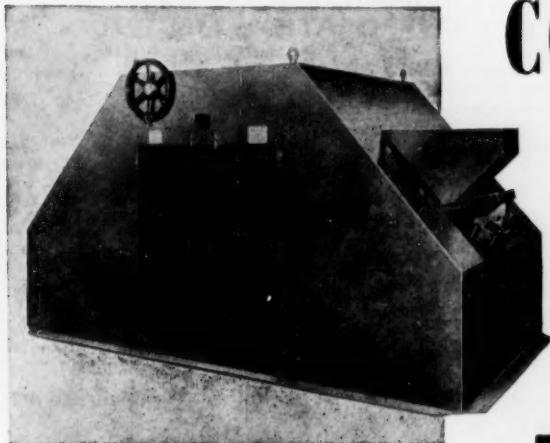
government. The Assembly will have a majority of members elected by the people of Malaya and thus will have the power to introduce measures which could materially affect the interests of this company. It is gratifying to note, however, that one of the leaders of the party that won the election is reported to have said that his party will seek a uniform policy on the alienation of mining lands, the encouragement of capital investment in prospecting and mining and in the improvement of methods of extraction and recovery of tin ore. The question of a uniform policy on the alienation of mining lands to which he refers is an important one. The present position is far from satisfactory in that all questions of land alienation are under the control of the various States comprising the Federation. It is felt that under the conditions that have hitherto prevailed the security of tenure is not what it should be in view of the large amount of capital that is called for to equip a property. Security of tenure is essential if the investment of capital in the country is to be encouraged.

Last year I said that the International Tin Agreement had been signed by all countries concerned but needed ratification by the respective Governments before becoming operative. Since then a number of ratifications have been received but it still lacks the necessary number before the agreement can come into operation. At the time the agreement was drawn up a fixed date was given for the signing of the agreement and personally I think it was a mistake not to have made a similar provision for its ratification. I cannot believe it is in the best interest of the industry that it should have hanging over it indefinitely an agreement of this nature with all its far-reaching obligations which may materially affect mining operations.

FUTURE OUTLOOK

As to the outlook for tin, this so far as it is possible to forecast at all, is encouraging. Grounds for optimism are derived from the figures of mine production and consumption for the first five months of the current year given in the Statistical Bulletin of the International Tin Study Group. The equivalent annual rate based on these figures would be respectively 158,000 tons and 145,000 tons, showing a surplus of 13,000 tons as compared with a surplus of some 33,000 tons for 1954.

The report and accounts were adopted.



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POWELL DUFFRYN LIMITED

SIR HERBERT MERRETT'S REVIEW OF GROUP ACTIVITIES

The annual general meeting of Powell Duffryn Limited was held on September 21 in London, **Sir Herbert Merrett** (the Chairman) presiding.

The following is an extract from his circulated statement:

Some further progress has been made in the settlement of compensation for our nationalized assets and Government Stock has been received and realized. There still remains, however, our claim against H.M. Government for compensation for our valuable Power Stations. We are facing the last hurdle in these very protracted negotiations and at long last it seems likely that the matter will be settled before the end of the current trading year.

The most significant features of the coal position in this country are, firstly, the increased consumption and demand for coal and, secondly, the failure of the industry to produce it.

In the absence of current supplies of British coal, our foreign trade must progressively diminish and may be nonexistent by the time Britain's output is stepped up or a surplus becomes available for reasons of reduced industrial demand at home.

Notwithstanding the great increase in prices, there appears yet to be little economic attraction in converting from solid to liquid fuel, but the time is rapidly approaching when liquid fuel will have to be used in greater quantities, especially in nationalized industries.

What surprises me to-day is the slow progress which has been made in this country in the more efficient use of solid fuel. It has been asserted with great confidence by combustion experts that a large percentage of our imported coal would become unnecessary if advice on modernization were sought and adopted.

GROUP ACTIVITIES

STEPHENSON CLARKE, LTD., both in total turnover and earnings, has had another good year. This Company, with its subsidiaries, continues to play an important part in the chain of coal distribution in this country, both as regards railborne and seaborne coal.

Some of you will already have read in the Press the encouraging reports on the results for last year of **ASSOCIATED COAL AND WHARF COMPANIES, LTD.**, in which Stephenson Clarke has a majority holding. The trading and financial results for the year are most satisfactory.

A most useful investment of the Stephenson Clarke Group to-day is in the heating business known as **WEATHERFOIL HEATING SYSTEMS, LTD.**, of which our Group holds practically the whole of the capital. The Weatherfoil heating system has proved most successful and the Company is fully engaged for some time to come.

The business of **JOHN KELLY, LTD.**, in Northern Ireland, in which we are joint partners with William Cory and Son, Ltd., continues to thrive.

CORY BROTHERS AND CO., LTD., despite the loss of its collieries, continues to produce good results and has proved to be a valuable acquisition.

Cory Brothers' mining and sawn timber business, now centralized and consolidated, is expanding in Sweden, Finland, and at home, and there appears to be no reason why this expansion should not be progressive and profitable.

In the development of its trade in home-grown timber, Cory Brothers and Co. has recently acquired the well-known firm of **J. R. GORDON AND CO.** with saw mills and other properties in Cheshire.

Another important Powell Duffryn subsidiary is the **CAMBRIAN WAGON AND ENGINEERING CO., LTD.**, which has maintained its satisfactory record of earnings and profits.

THE RHYMNEY ENGINEERING COMPANY, LTD., in which International Combustion (Holdings), Ltd., is our partner, is fully employed and output and profits increase year by year.

POWELL DUFFRYN TECHNICAL SERVICES, LTD., is now being utilized to a greater extent than at any time in its short history. Last year I reported that this Company had been successful in securing an important contract in Korea through U.N.K.R.A. for the rehabilitation and development of the mines of Korea. I am glad to be able to inform you that work under this contract is proceeding satisfactorily and that, with admirable co-operation between the other organizations concerned and our team of experts, outputs are rising and are somewhat ahead of target figures.

The report and accounts were adopted.

ASHANTI GOLDFIELDS CORPORATION LIMITED

NOTICE IS HEREBY GIVEN that the Board of Directors have to-day declared an Interim Dividend (No. 118) on the Issued Capital of the Corporation at the rate of 9.6d. per Unit of Stock, less Income Tax at 8s. 6d. in the £. This Dividend which is in respect of the year ending September 30, 1955, to be payable on and after November 9, 1955, to all Stockholders on the Registers on September 23, 1955.

The Transfer Books will be closed from September 24, 1955, to October 3, 1955, both dates inclusive, for the preparation of Dividend Lists.

By Order of the Board,

E. W. MORGAN, Secretary.

Registered Address :

10 Old Jewry,
London, E.C.2.

September 20, 1955.

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NOTICE IS HEREBY GIVEN that the Board of Directors have to-day declared an Interim Dividend (No. 36) on the Issued Capital of the Company at the rate of 2.4d. per Unit of Stock, less Income Tax at 8s. 6d. in the £. This Dividend which is in respect of the year ending September 30, 1955, to be payable on and after November 9, 1955, to all Stockholders on the Registers on September 23, 1955.

The Transfer Books will be closed from September 24, 1955, to October 3, 1955, both dates inclusive, for the preparation of Dividend Lists.

By Order of the Board,

E. W. MORGAN, Secretary.

Registered Address :

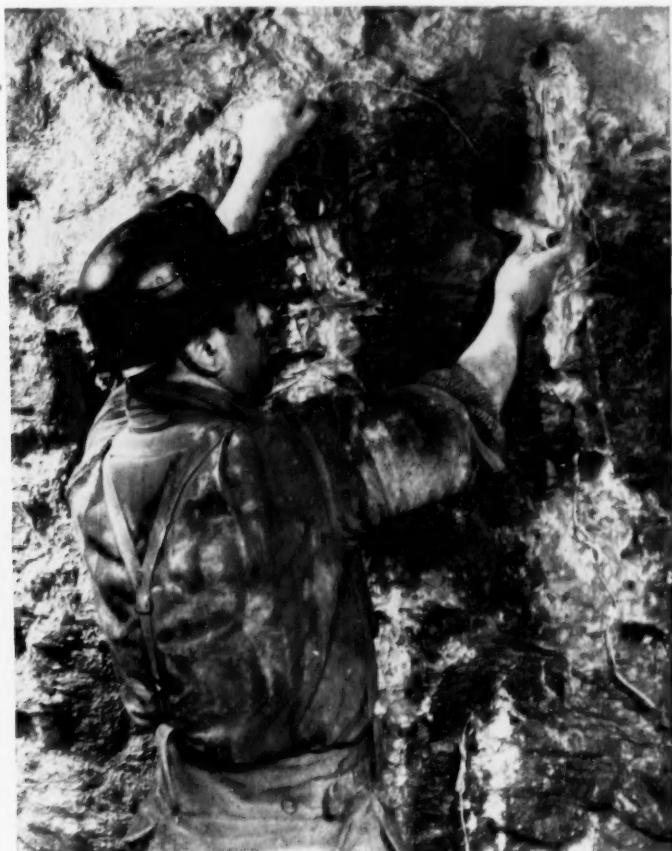
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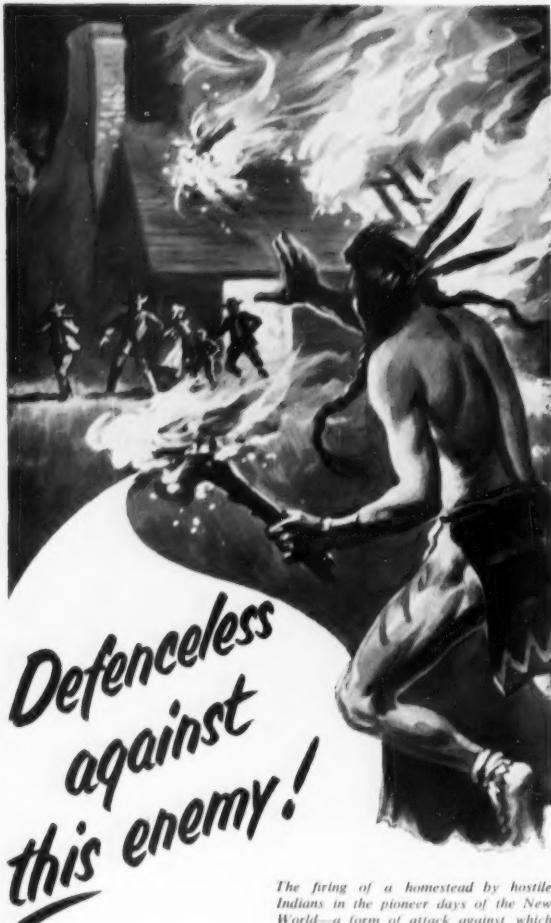
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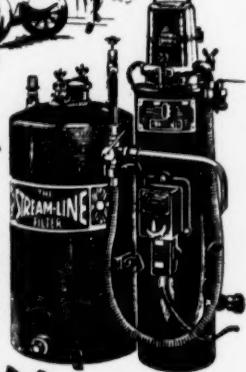
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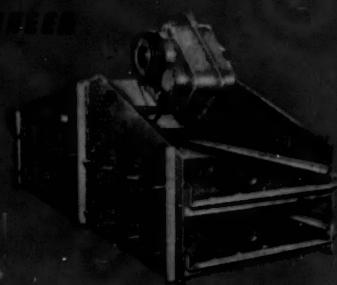
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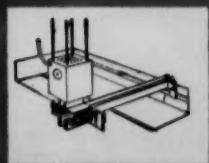
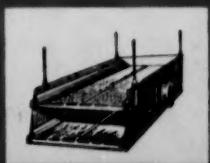
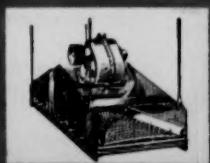
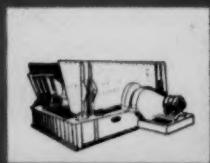


look at this way... screen... screen

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ALLIS - CHALMERS LOW-HEAD HORIZONTAL VIBRATING SCREENS



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